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AMERICAN Journal of Public Health AND THE NATION'S HEALTH

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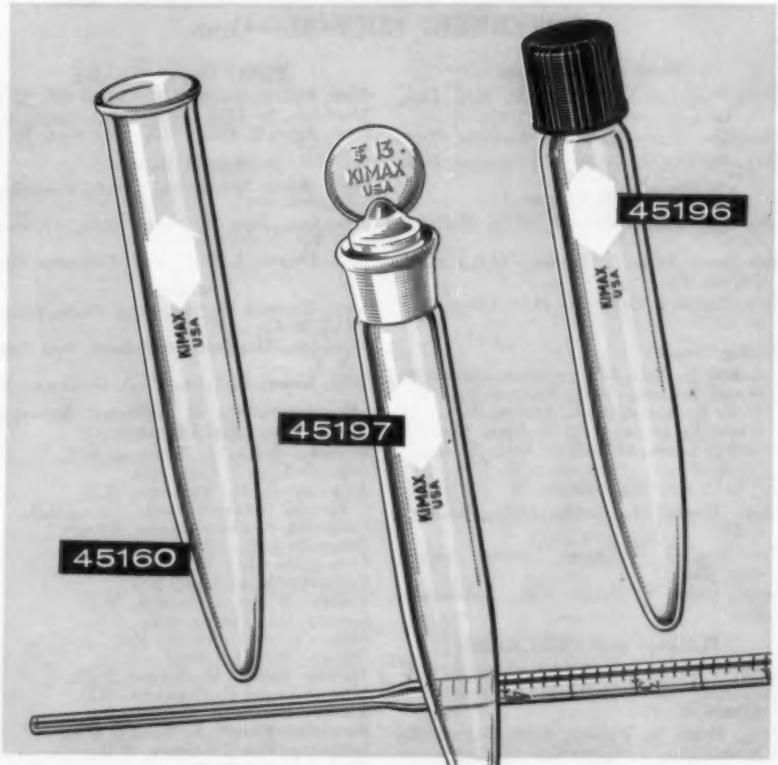

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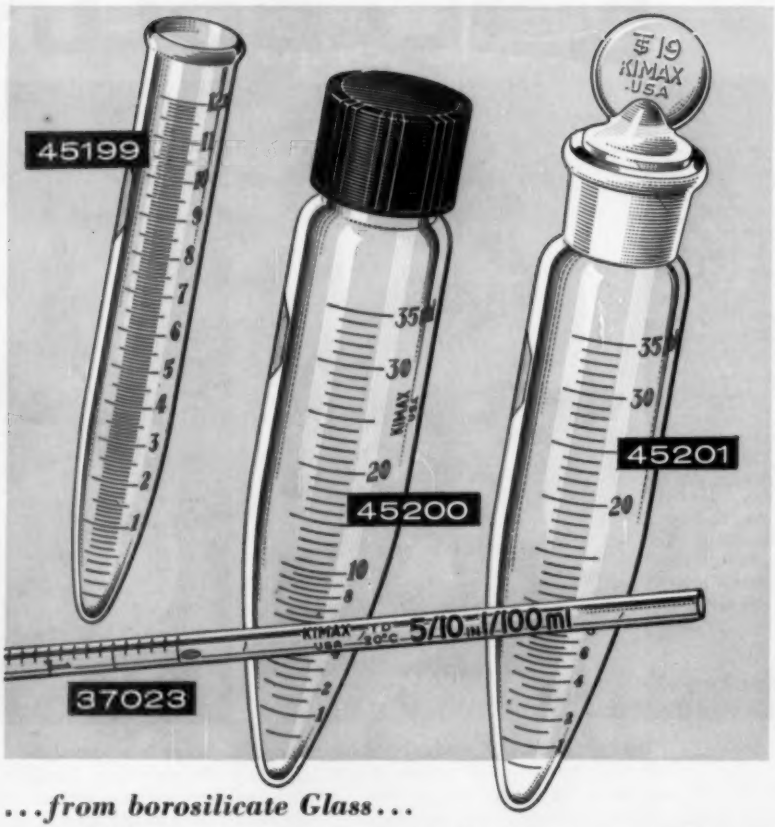

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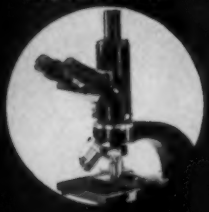

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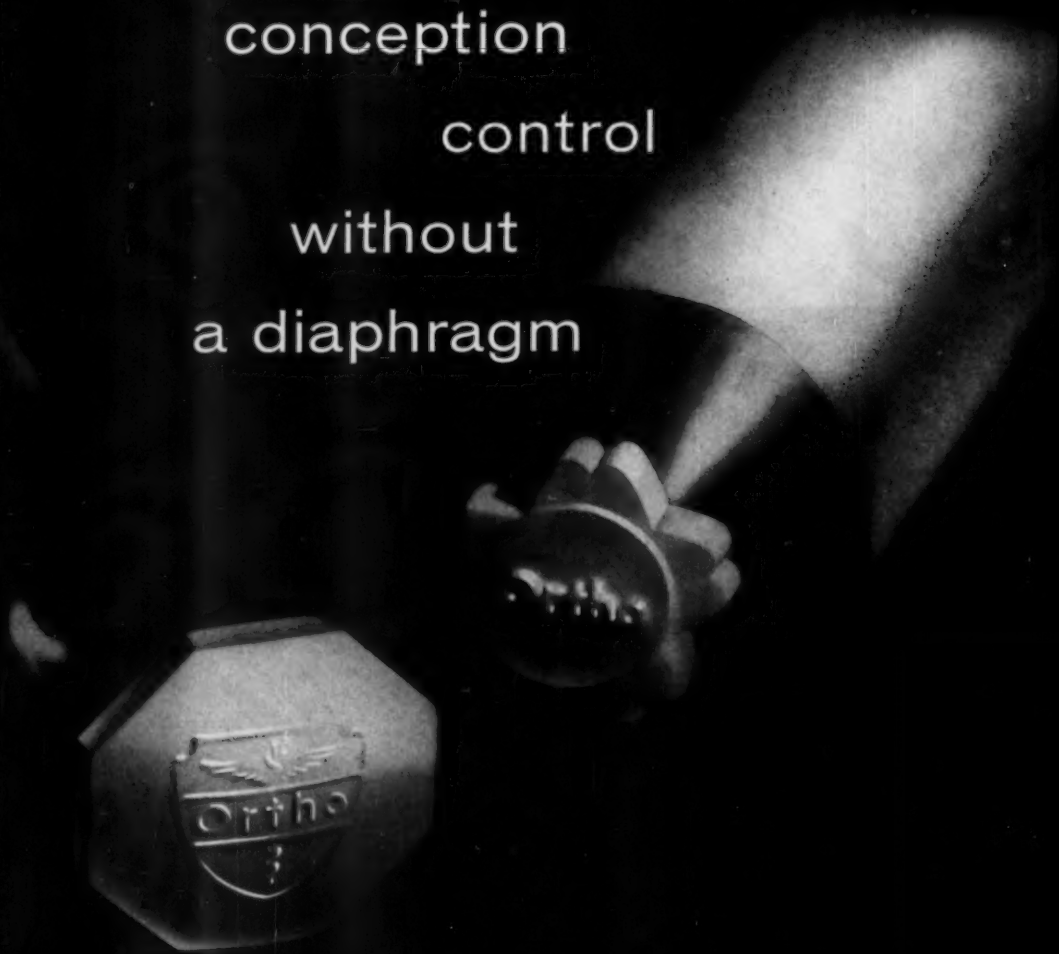

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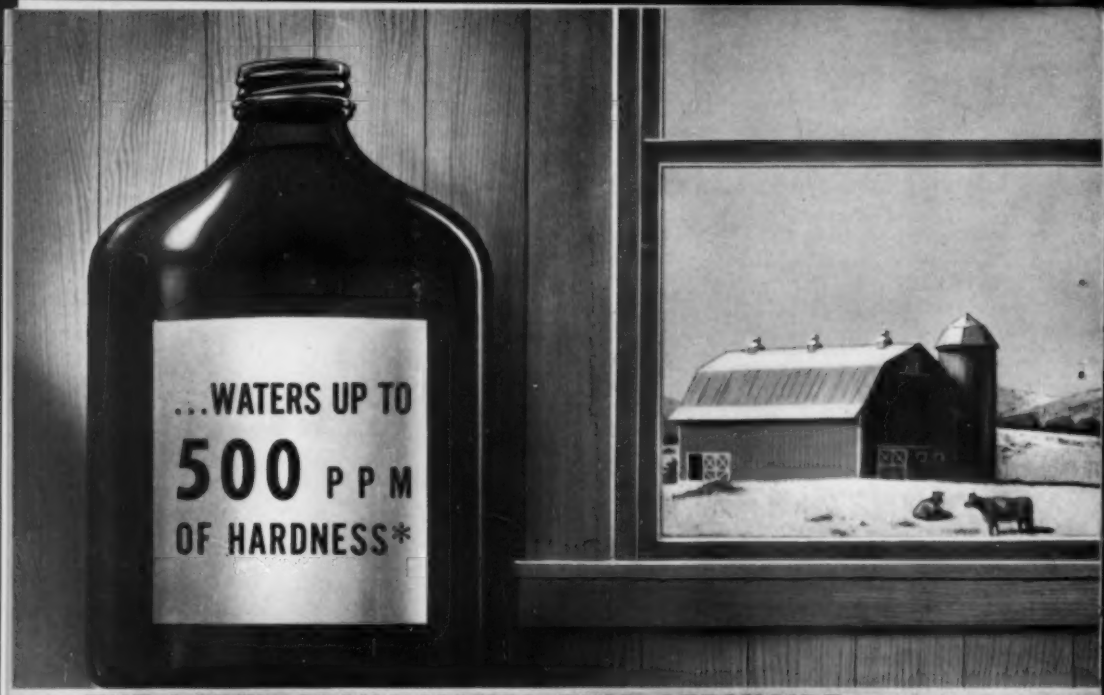


THE LABEL CLAIM MAKES THIS GERMICIDE...

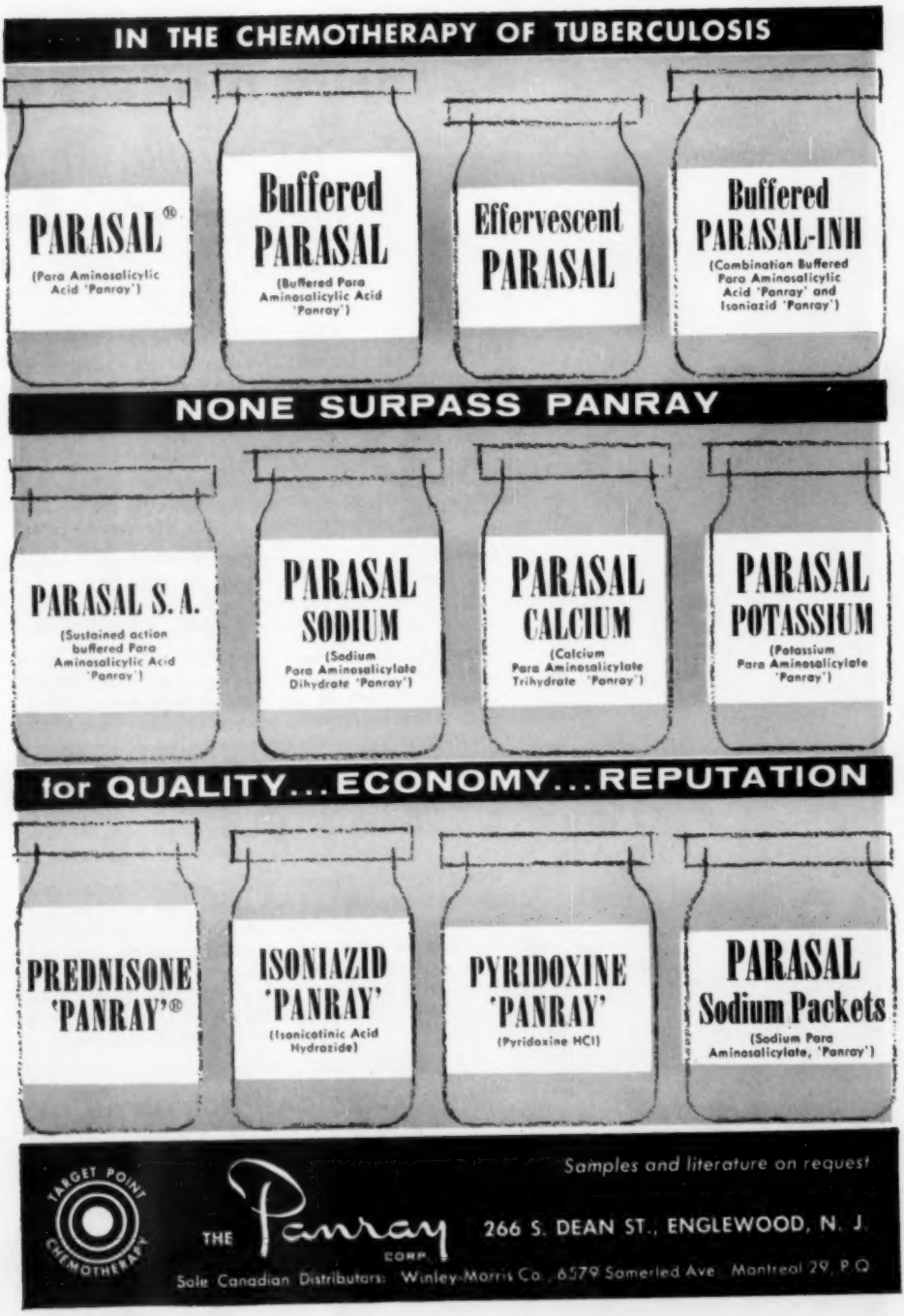
safe on sight

In accordance with U.S. Public Health Service recommendations, more and more State agencies are accepting quaternary based germicides which state their water hardness tolerance levels on the product label. The *higher* the water hardness tolerance level, the *greater the area* in which the germicide will be *safe*—beyond question, beyond the risk of public health. Onyx is glad to encourage all efforts toward this end, and as its contribution, offers germicide manufacturers quaternaries with the *highest hard water tolerance* and with *accepted* label claims.

Because water hardness is at best a variable, from well to well and from season to season, a safe germicide or sanitizer should offer the highest level of water hardness tolerance. Products based on Onyx' BTC-824, for example, are effective germicides in waters up to at least 500 ppm. Products based on other Onyx' quaternaries are effective in waters up to 1,100 ppm. All Onyx quaternaries are tested in accordance with Interpretation No. 21, Federal Register, September 1956. These claims have been reviewed and accepted by the U.S. Department of Agriculture.

*For further information on labeling procedures and on Onyx quaternaries, write for Bulletin HW-6-7. ONYX OIL & CHEMICAL COMPANY, Industrial Division, 190 Warren Street, Jersey City 2, N. J.

ask the man from Onyx ONYX CHEMICALS


IN THE CHEMOTHERAPY OF TUBERCULOSIS
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(Buffered Para Aminosalicylic Acid 'Panray')
Effervescent PARASAL
Buffered PARASAL-INH
(Combination Buffered Para Aminosalicylic Acid 'Panray' and Isoniazid 'Panray')
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Fluid asset . . .

IN ATOMIC DISASTER

. . . the potable water in bottled soft drinks

Public health authorities have long recognized bottled carbonated beverages as a ready and reliable source of pure fluids in times of epidemic and natural disaster.

The advent of the Atomic Age and the possibility of atomic disaster raises several questions: (1) What is the ability of carbonated beverage containers to withstand atomic-explosive forces? (2) What is their ability to withstand exposure to radio-activity?

These questions were answered in the 1955 series of U. S. Continental Tests of Nuclear Devices at the Nevada Proving Grounds, during Operation Teapot

It was found that "typical commercial soft drinks in glass or metal cans will survive the effects of the blast over-pressures such as found at 1/4 mile from GZ (Ground Zero) . . . " on Shot II.[1]

"Induced radio-activity, at the forward test locations of 1270 feet from GZ during Shot II was not great in soft drinks, and would allow the use of these beverages as potable water sources for immediate emergency purposes as soon as the storage area is safe to enter after a nuclear explosion. Although the containers, whether of metal or glass, showed some induced radio-activity, none of this activity was transferred to the contents. The beverages themselves exhibited only mild induced radio-activity, well within permissible limits for emergency use."[2]

CONCLUSION: "Bottled soft drinks can be consumed safely, immediately after exposure to and recovery from an atomic explosion, such as Operation Teapot. Since these beverages are available in all urban areas, no particular stockpile or special provision is required. In normal circulation in stores and in the home, bottled soft drinks form a continuously fresh supply of potable water, plus desirable food carbohydrates."[3]

AMERICAN BOTTLERS OF CARBONATED BEVERAGES

National Association of the Bottled Soft Drink Industry
Washington, D. C.

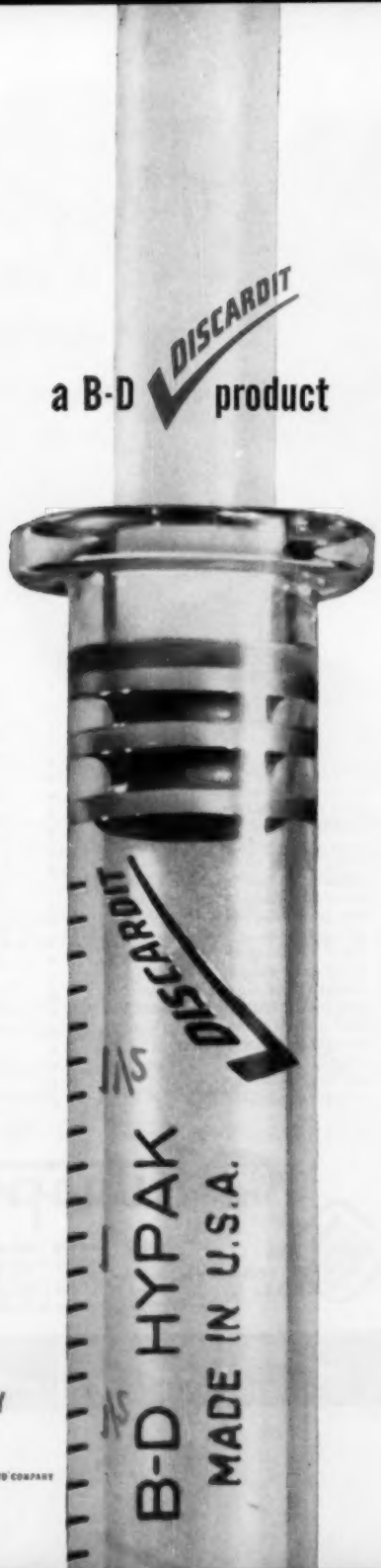
[1] McConnell, E. Rolland; Sampson, George A.; Sharf, John M.: "The Effect of Nuclear Explosions on Commercially Packaged Beverages" January 24, 1957. Office of Technical Services, Department of Commerce, Washington 25, D. C. • [2] *Ibid.* • [3] Sharf, John M., Dr.: "Soft Drinks and the A-Bomb," National Bottlers' Gazette, January, 1958.

THE BARREL IS GLASS

HYPAK®

STERILE DISPOSABLE SYRINGE-NEEDLE COMBINATION

a B-D DISCARDIT product



- all-glass barrel...the material proved safe by time and use
- no solvent action...even after extensive, prolonged contact with parenteral fluid
- sterile, pyrogen-free, nontoxic... **B-D Controlled** from top to tip
- new, sharper needle point for one-time use...greater patient comfort

B-D BECTON, DICKINSON AND COMPANY
RUTHERFORD, NEW JERSEY

B-D, HYPAK, AND DISCARDIT ARE TRADEMARKS OF BECTON, DICKINSON AND COMPANY

OWD Ritespoons squarely and completely meet all the sanitary and use requirements for an eating utensil used in public food service. They solve rather than create problems for Public Health Authority. They are available from local dealers everywhere. Any operator large or small can afford to serve them. Thousands of fountains, drive-ins, snack bars and restaurants all over America are using them to provide the full utility of metal ware and complete sanitation in a single use utensil. Write—on your letterhead—for samples, data.

1 – IT CANNOT BE RE-USED—There is no way by which an OWD Ritespoon can be restored to its original appearance or made to look clean after a single use. One person only ever uses it.

2 – PROTECTIVE PACKAGING AVOIDS CONTAMINATION—Only OWD Ritespoons are nested—not dumped—in carton. They protect each other avoiding contamination in dispensing and storage. Scientific tests show that OWD Ritespoon is the cleanest of all single use spoons examined.*

3 – SMOOTH—NO CUTTING EDGES—No splinters nor sharp edges on an OWD Ritespoon to scratch mouth membranes.

4 – STRONG, COMPLETELY SERVICEABLE—OWD Ritespoons are strong and rigid. Pieces do not break off to be ingested with food. They provide complete utility of metal ware.

5 – FOR TOTAL SANITATION—OWD Ritespoons are available, individually sealed at the factory in sanitary paper wrappers, plain and printed.

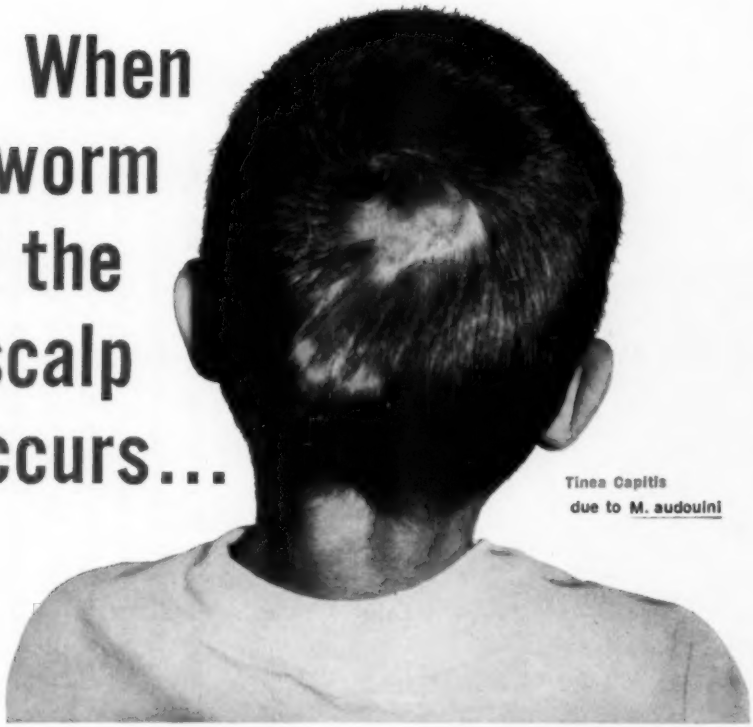
6 – NATURALLY PURE—The only spoon made of selected hard wood fashioned in the "true shape of table silver."

**William T. Ingram—Investigation of sanitary aspects of single-service spoons 1955-56.*

O.W.D. Ritespoon®

Oval Wood Dish Corporation, Dept. H
Tupper Lake, New York
Graybar Bldg., New York City 17 • 506 So. Wabash Ave., Chicago 5, Ill.
The Oval Wood Dish Company of Canada, Ltd.
Industrial Center No. 5, Quebec, P. Q., Canada

When ringworm of the scalp occurs...



Tinea Capitis
due to M. audouini

. . . topical antifungal therapy is recommended as immediate treatment. Prompt use of Salundek will destroy accessible spores and form a protective coating, reducing the likelihood of spread of the disease to other areas of the scalp, or to other children.

*New Dosage Form, Salundek Solution** – It is supplied in 3-ounce bottles with a controlled flow applicator cap. Now there is a choice that will lead to better patient cooperation during the treatment of this stubborn disease.

Many investigators have reported that the ointment and the solution have the same high percentage of cures, obtained in an average of 12 to 16 weeks.

Salundek also eliminates the hazard of x-ray therapy • seldom causes skin reaction • offers convenience in use – no stain, no odor and no effect on future hair growth.

Supplied: SALUNDEK OINTMENT, 2 oz. tubes and 1 lb. jars. SALUNDEK SOLUTION, 3 oz. bottles with controlled flow applicator cap.

Write for supply of "Instructions for Home Care" pads.

SALUNDEK® OINTMENT / SOLUTION

(Brand of Zinchlorundesal)

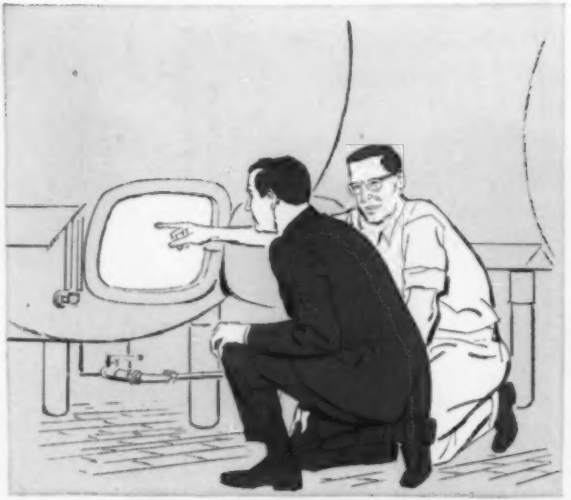
Maltbie

MALTBIE LABORATORIES DIVISION • Wallace & Tiernan Incorporated • Belleville 9, N. J.

*In the presence of open lesions, the use of the ointment may be preferred at first since the base of the solution causes occasional transient stinging. Avoid contact with the eyes.

What it's like to work with

the best sanitation troubleshooters in the business



When the problems are tough, it is a pleasure to work with men who have had experience solving that type of problem.

That's our attitude at Diversey . . . and that's why we maintain our Technical Service Department . . . a select group of highly talented people who know where to look in case of trouble, what to do, how to do it and when to do it. You can count on them for quick, positive action that finds the causes and solutions to problems. Here is an intensively trained group with broad experience in every phase of food industry sanitation. If you have a challenge, these are the men you want at your side.

Write today for information on how Diversey's Technical Service Department can serve you.

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Dialogue from a small patient...

Um-m-m!

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SUPPLIED:
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Custard flavor—150,000 units per 5-cc. teaspoonful, bottles of 2 fl. oz.

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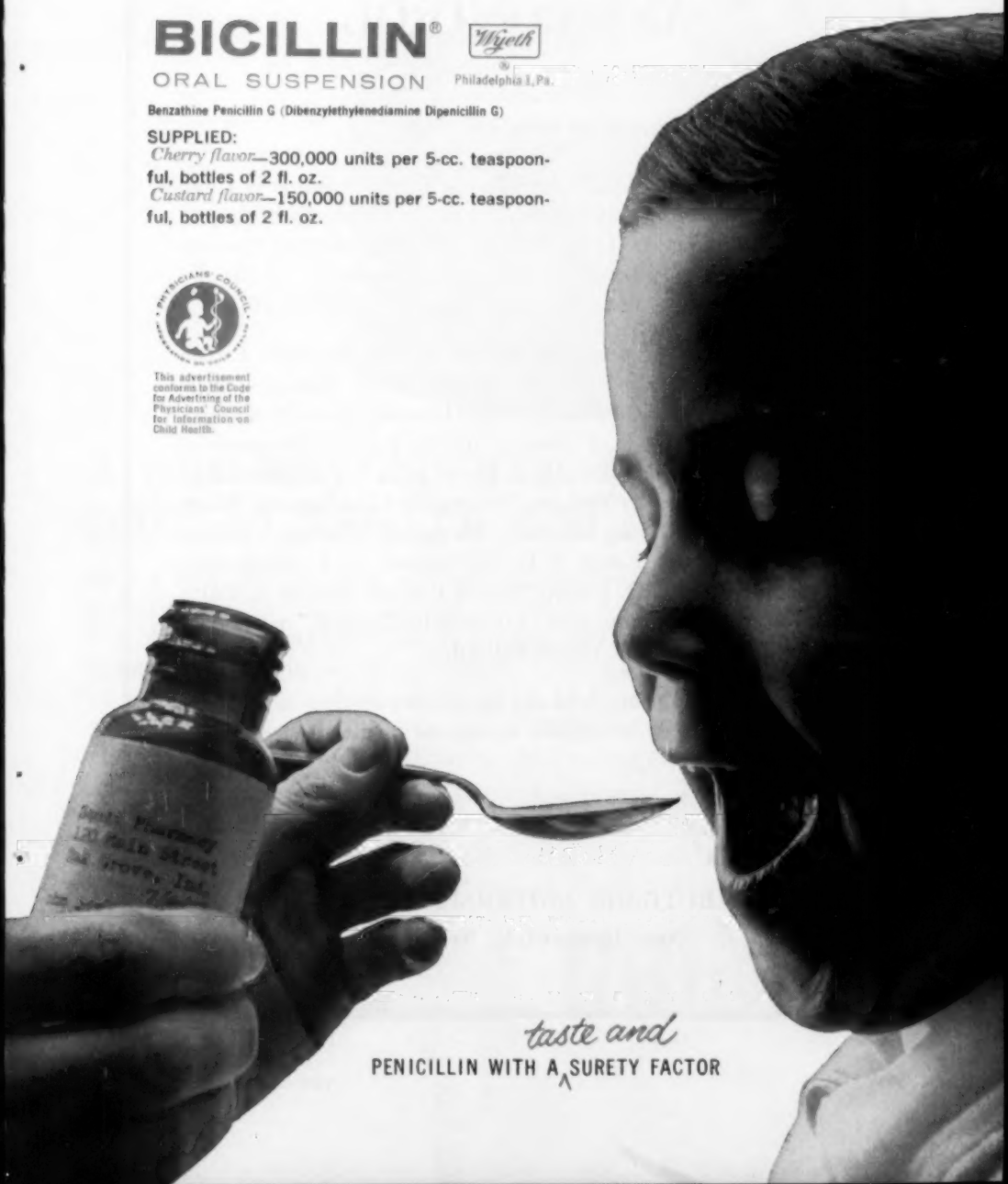
This advertisement conforms to the Code for Advertising of the Physicians' Council for Information on Child Health.



taste and

PENICILLIN WITH A SURETY FACTOR

Progress in
PSITTACOSIS RESEARCH AND CONTROL

Edited by Fred R. Beaudette

Foreword by Richard E. Shope

Significant to any public health official, this volume is a natural extension of the work presented in *Psittacosis*, published in 1955. Twenty-one experts have contributed sixteen chapters covering the whole range of our present knowledge of the disease which has become so important a public health problem.

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Whenever therapeutic trial is warranted (80% of aged, debilitated, and generally obese diabetics usually respond), Orinase offers physicians excellent control of the patient, and better control of the public health dollar.

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Listed by Underwriters' Laboratories and the Canadian Standards Association, this Size 2 Model EXD Centrifuge has explosion-proof ¾ hp motor, control housing and electrical fittings. So, it's safe for use in all Class 1 Group D atmospheres. This model accommodates all heads and other accessories used in the International Size 2 Centrifuge and with corresponding speeds and forces.

SAFE

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Developed for the U. S. Army Biological Warfare Laboratories, Fort Detrick, Maryland, International Sealed Accessories are now being used for centrifuging TB sputum, fungi and other infectious materials without risk of contaminating centrifuge and surrounding air. New, enlarged line includes cushioned Duralumin cups and stainless steel shields with air-tight screw-on covers for holding all standard centrifuge bottles and tubes.

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International, with its problem-solving experience since 1901, has created new Centrifuges and Accessories for better, faster and safer performance. Designed with operational safety a foremost consideration, each Centrifuge and each piece of accessory equipment bears the IEC seal of quality and is carefully overload tested.
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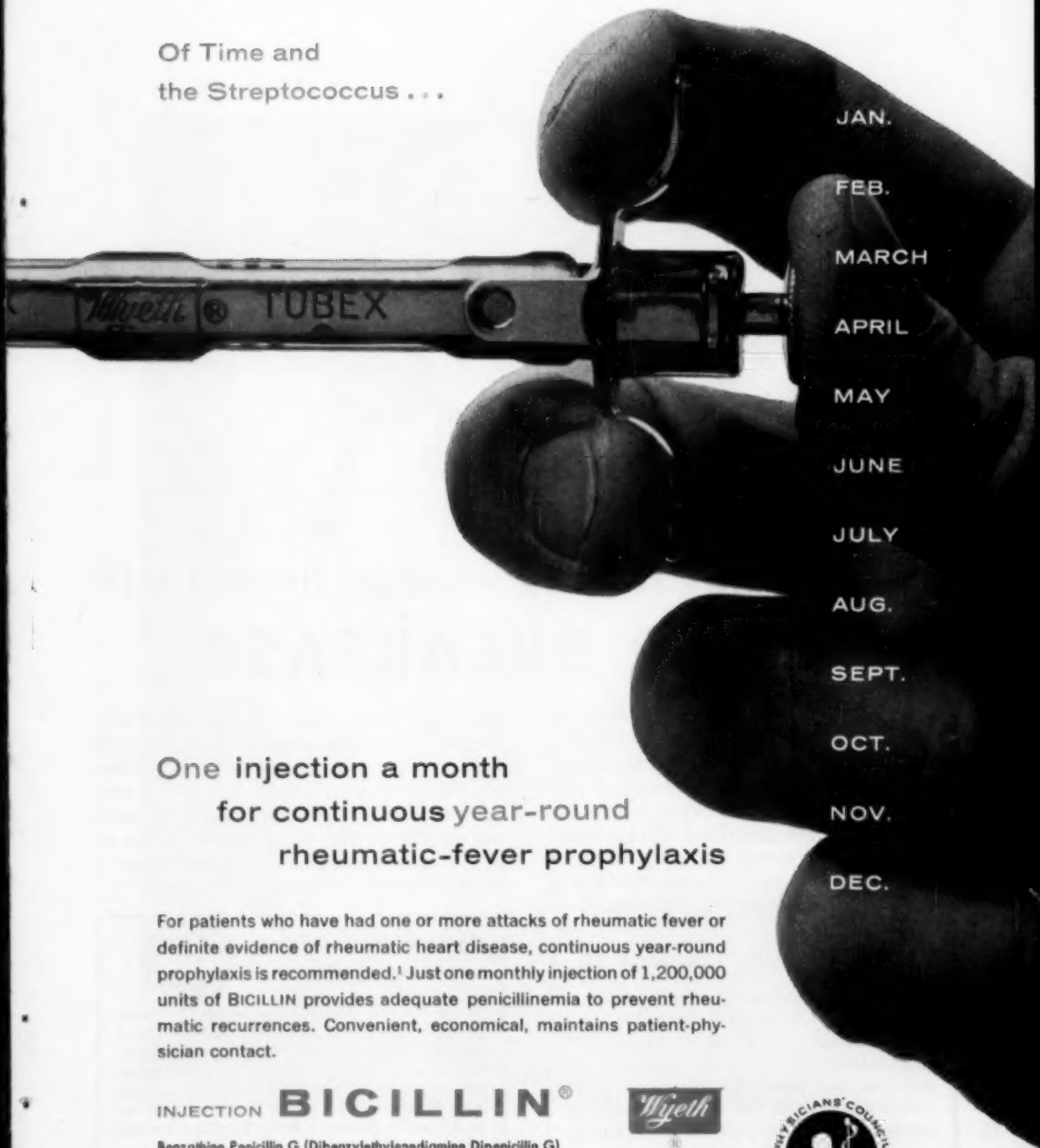
International Equipment Co.

1202 SOLDIERS FIELD ROAD, BOSTON 35, MASS., STadium 2-7900

International—your dependable source for centrifugal force

Of Time and
the Streptococcus . . .



One injection a month
for continuous year-round
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Benzathine Penicillin G (Dibenzylethylenediamine Dipenicillin G)

PENICILLIN WITH A SURETY FACTOR

Wyeth
Philadelphia 1, Pa.

Supplied: 1,200,000 units in TUBEX® sterile-needle unit (2 cc. size), pkgs. of 10; and in single-dose disposable syringes.

1. American Heart Association: Committee on Prevention of Rheumatic Fever and Bacterial Endocarditis: Circulation 15:154 (Jan.) 1957.

PHYSICIANS' COUNCIL · INFORMATION ON CHILD HEALTH ·

This advertisement conforms to the Code for Advertising of the Physicians' Council for Information on Child Health.

*a quick and lasting energy breakfast** *is a* **BETTER BREAKFAST**

The fast tempo and strenuous demands of modern life demand quick and lasting food energy. The Iowa Breakfast Blood Sugar Studies proved that a basic cereal and milk breakfast providing about 20 gm. mixed plant and animal protein (cereal and milk) provided quick and lasting energy throughout the early and late morning hours. This quick and lasting energy basic breakfast pattern consists of the following: orange juice, ½ cup; cereal (dry weight), 1 oz.; with whole milk, ½ cup; and sugar, 1 tsp.; bread, white enriched, 2 slices toasted; with butter, 1 tsp.; whole milk, 1 cup, and coffee. It provides, for most adults, about one-fourth of the day's requirements of protein and calories and contributes a good share of essential vitamins and minerals.

*What is meant by "Quick and Lasting Energy"? It is a prompt "lift" due to a quick rise in blood sugar—a lasting "lift" due to the fact that the blood sugar remains up and falls only gradually during the late morning hours. The Iowa Breakfast Studies demonstrated that the basic cereal and milk breakfast provided Quick and Lasting Energy.

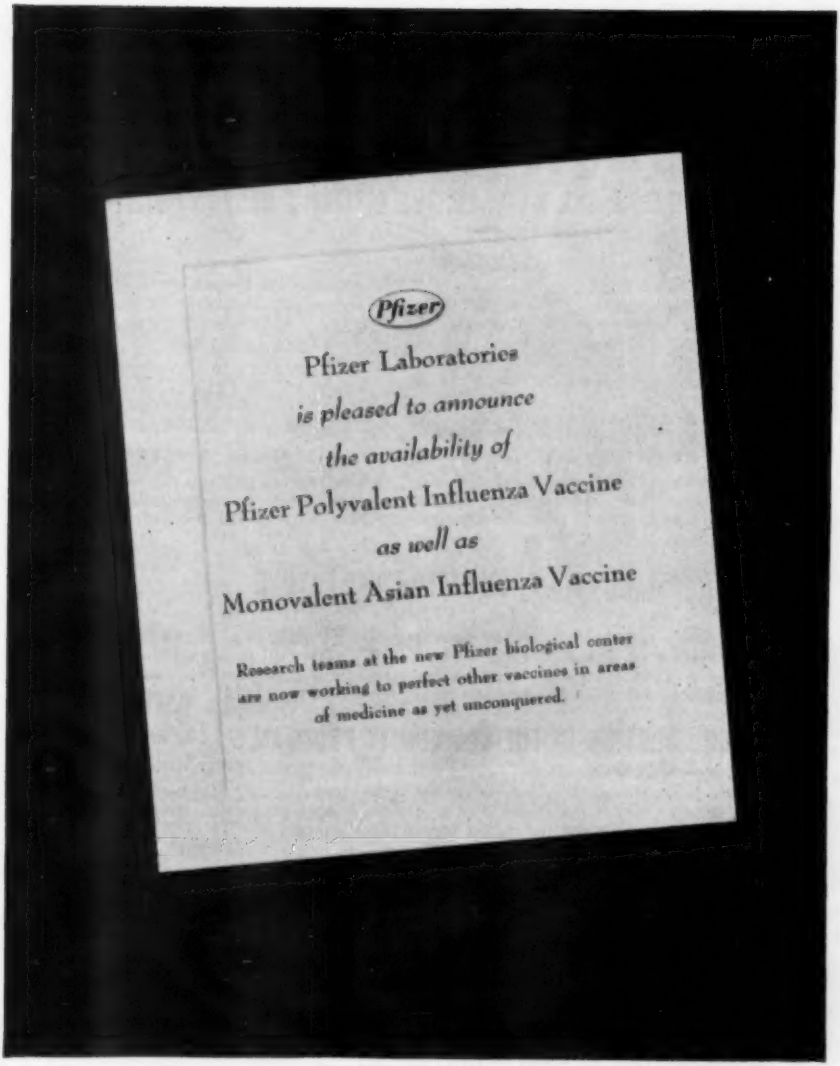
FOOD COMES FIRST AT BREAKFAST

At the National Food Conference held in Washington early this year it was reported that about one-half of the population ate inadequate breakfasts. The need for better breakfast eating habits was emphasized. In this 8th September nationwide Better Breakfast Month the Cereal Institute invites you to become a Better Breakfast Booster in your community.

Reference: A Summary of the Iowa Breakfast Studies. Chicago: Cereal Institute, Inc., 1957

CEREAL INSTITUTE, INC., 135 South LaSalle Street, Chicago 3, Illinois

A research and educational endeavor devoted to the betterment of national nutrition


Pfizer
Pfizer Laboratories
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Pfizer Polyvalent Influenza Vaccine
as well as
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Research teams at the new Pfizer biological center are now working to perfect other vaccines in areas of medicine as yet unconquered.

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NEW LILLY TETANUS AND DIPHTHERIA VACCINE MINIMIZES SENSITIVITY REACTIONS

for adults and older children

With the incidence of diphtheria steadily declining, it is no longer possible to assume that the vast majority of adults are naturally immune. More and more it is becoming necessary to rely on artificial means. Adults and older children, however, often become sensitized to diphtheria proteins by primary immunization and repeated contacts with the organism. They may respond to the usual diphtheria immunizing dosage with severe local or systemic reactions.

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practical for mass immunization

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Available as V-1085 in 5-dose packages. Order through your Lilly representative or your nearby pharmacist.

ELI LILLY AND COMPANY • INDIANAPOLIS 6, INDIANA, U. S. A.

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orthalimentation*
for infants

"built-in" sustained intake—With Similac, as with breast milk, feeding and vitamin provision coincide smoothly, assuring a sustained, throughout-the-day intake of these essential nutrients.

"built-in" vitamin stability—With Similac, as with breast milk, the essential vitamin intake is stable. With improved food technology and constant laboratory controls, the presence of orthalimentary levels is assured in manufacture . . . when purchased . . . *and when prepared for the infant.*

"built-in" assurance of level of intake—With the prescription of Similac, you are assured the infant is receiving his essential vitamins.

*ORTH (Ὀρθός) ALIMENTATION = correct nourishment

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There is no closer equivalent to the milk of healthy, well-nourished mothers

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Rusk

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By JOHN J. HANLON, M.S., M.D., M.P.H., Medical Director, U. S. Public Health Service, and Director, Public Health Division, U. S. Foreign Operations Administration; Formerly Professor of Public Health Practice, School of Public Health, University of Michigan. 1955, 2nd edition, 693 pages, 6½" x 9½", 47 illustrations. Price, $8.50.

Cowdry

THE CARE OF THE GERIATRIC PATIENT

Discarding the complacent attitude that aging and the resulting suffering are but natural in older people, Dr. Cowdry's soon-to-be-released book approaches the problems of caring for geriatric patients by anticipating their medical problems and specifically points out community services available to them and their medical advisors. Valuable discussions are provided on medical care in the patient's own home and on the selection of a good nursing home. The book reveals much new, accumulated knowledge about the practical, comprehensive care of geriatric patients—including medical, dental, psychiatric, social, economic and nutritional aspects.

Edited by E. V. COWDRY, Ph.D., Sc.D. (Hon.), Director of Wernse Cancer Research Laboratory, Washington University School of Medicine; Formerly President of the Gerontological Society. Written by 22 contributors. Ready this month. Approx. 500 pages, 4⅞" x 7⅝", 7 illustrations. Price, $8.00.

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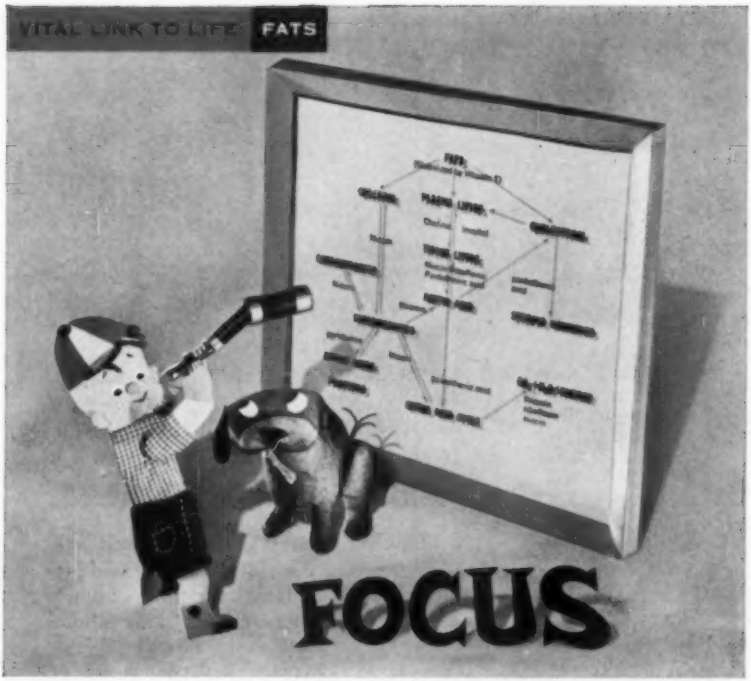

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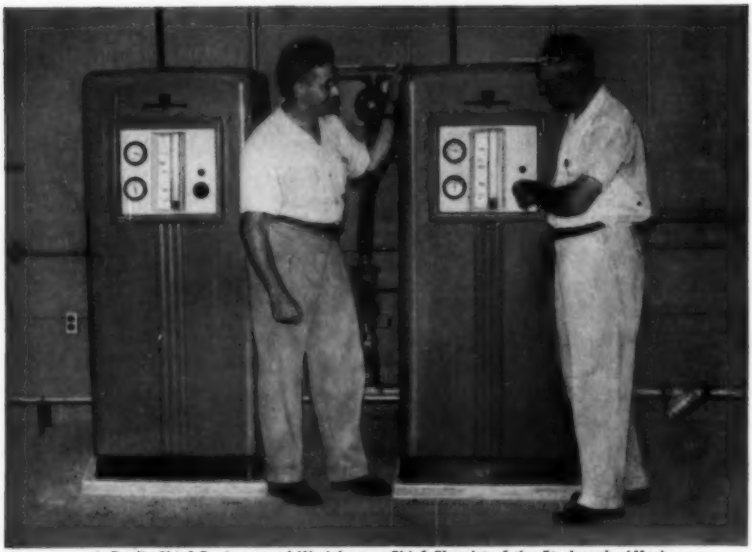

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As the community health program focuses more and more on personal health services, increasingly precise evaluative methods and technics are needed. Here a method has been devised to measure the availability, quality and efficiency of prenatal care in an urban area. At the same time, the volume of unmet need is estimated.

PRENATAL CARE IN METROPOLITAN BOSTON

Leonard S. Rosenfeld, M.D., M.P.H., F.A.P.H.A., and Avedis Donabedian, M.D., M.P.H.

THIS STUDY is one of several undertaken to develop methods for evaluating the effectiveness of a proposed program of regional organization of health services in a large urban community. In pursuing this objective, an attempt has been made to devise indexes of availability, quality, and efficiency [1] of health services on the assumption that it is the purpose of community organization to bring about improvements in these attributes. It has been postulated that in order to be useful such indexes should: (1) be valid; (2) be reliable; (3) be feasible in terms of cost; and (4) be applicable to many communities.

The adequacy of prenatal care received by a representative sample of women is suggested as one index of the availability of medical care in a community. It is generally agreed that pregnant women should have medical and dental supervision. Furthermore, there are widely accepted standards of what constitutes minimum adequate prenatal care. With information concerning the amount and nature of prenatal care received, it should be possible to arrive at valid and reliable estimates of unmet need for this form of health service.

Numerous studies have shown that, while illness and disability are more frequent among the socially less fortunate segments of the community, the utilization of medical services in these groups is relatively low. This suggests that unmet need for medical care bears an inverse relationship to socioeconomic status. Several studies have shown that the adequacy of prenatal care conforms to the general pattern by being inversely related to social and economic factors.[2-7]

These studies suggest that it should be possible, by relating adequacy of prenatal supervision to social and economic characteristics of the mother, to obtain a fairly accurate picture of the prevalence and distribution of unmet

need for this kind of medical care within the community.

Ordinarily, information concerning social and economic characteristics of families is not available with many forms of health data although the subject's address is very often provided. Since the purpose of our studies was to develop methods that could be applied uniformly to a wide variety of health indexes, families were also classified according to the average characteristics of the census tracts in which they lived. Census-tract data have been widely used in research in economics and urban ecology and to a lesser degree in public health.[8, 9]

One aim of the study was to test the validity of a socioeconomic classification based on census tract characteristics by comparing results obtained using this method with those obtained by using socioeconomic information obtained from individual families during the course of the study.

Method

Information concerning prenatal care was obtained by means of a self-administered questionnaire distributed, on the second or third postpartum day, to all mothers who were delivered in a selected group of hospitals during the period of one month. Since about 98 per cent of births in this area occur in hospital, it was felt that this procedure would provide a reasonably complete inventory of prenatal care in the community.

Study Area and Socioeconomic Status

Since the primary purpose of this study was to develop a method rather than to conduct a survey, a segment of Metropolitan Boston comprising 90 contiguous census tracts was chosen as the study area. This area has a population of approximately 500,000 and represents a wide range of social and economic characteristics among its component census tracts. It is also fairly representative of the Boston Standard Metropolitan Area with respect to several demographic and socioeconomic variables.

Census tracts were assigned scores of socioeconomic status using a modification of the method described by Shevky and Bell.[10] A combined score based on income, education, and occupation was used to classify census tracts into five socioeconomic groups. Group I is the lowest, and Group V the highest, in rank. Due to small numbers, the highest two groups were combined.*

The Questionnaire

Considerable effort went into devising and pretesting a self-administered questionnaire that would be precise, yet simple enough to be suitable for respondents of all educational levels. The questionnaire was designed to yield information about the following: (1) parity; (2) length of gestation in weeks; (3) whether prenatal care was received and from what source; (4) "quantity" of care in terms of numbers of prenatal visits made during each month of pregnancy; (5) content of care based on whether routine procedures were performed and how frequently; (6) health education as determined by whether information was received about diet, control of weight, amount of rest and exercise, appropriate clothing, and danger signs as well as from whom or from what source such information was obtained; (7) dental care based on whether the respondent had trouble with her teeth or gums and whether she went to a dentist during her pregnancy; and (8) the address of the respondent and information about education, occupation, and income.

* A detailed description of the method used to classify census tracts into socioeconomic groups is included in a report on a household survey (see reference 11).

Standards of Prenatal Care and Classification of Adequacy*

In developing standards for evaluating the adequacy of various aspects of prenatal care, reference was made to the fairly detailed formulations of generally accepted practice that are available in the literature.[12, 13] In addition, experts in obstetrics were consulted concerning the general standards adopted, as well as the details of the scoring system devised for this study.

The scoring system used for appraising the quantitative adequacy of prenatal care took into account promptness in seeking and establishing medical supervision, the continuity of care, and the numbers of prenatal visits made during each month of pregnancy. Allowance was made for length of gestation of less than 40 weeks' duration. Care was defined as "satisfactory" if it was initiated not later than the fourth month of pregnancy; there was at least one visit each month; and a minimum total of seven visits were made during a 40-week gestation. The criteria of "satisfactory" care adopted for the purpose of this study are minimum requirements, lower than those ordinarily accepted for optimum care.†

The score of "content" of prenatal care was based on the reported frequency (at all visits, some visits, not at all) with which urine, blood pressure, and weight were examined, and on whether a pelvic examination was done and how soon after the initiation of medical supervision. There are, admittedly, many other factors of vital importance to the assessment of the content and quality of prenatal care. It is doubtful, however, that reliable information concerning these factors can be obtained through the administration of a questionnaire.

In rating health education, it was assumed that the medical attendant has primary responsibility for providing adequate information concerning the hygiene of pregnancy. Health education was considered to be "good" if information was received on at least four of the five items (food, weight, rest and exercise, clothing, danger signs) listed in the questionnaire, and including the item on "danger signs." In order to receive credit, information had to be given during the current pregnancy by the doctor or his nurse, or obtained from books or pamphlets or at classes for expectant mothers recommended by them.

In interpreting adequacy of dental care received, it was assumed that at least one visit to a dentist should be made during pregnancy for the purpose of early detection and treatment of possible abnormalities.

Sample of Hospitals and Respondents

An attempt was made to include in the survey all deliveries of 28 or more weeks' gestation occurring during the period of one month to residents of the study area.‡

The sample of hospitals comprised: (1) all hospitals with obstetrical services located in the study area; (2) hospitals in two adjacent towns known to provide maternity services for residents of the study area; and (3) all other hospitals in Metropolitan Boston expected (judging from a preliminary examination of birth certificates for a period of two months during 1953) to report three or more births per month to residents of the study area. Births that might take place outside Metropolitan Boston were

* Copies of the schedule and standards used in this study are available on request.

† See Appendix at end of this paper.

‡ The study was conducted during the month of June 1956. One hospital (with 34 respondents) agreed to participate in the study several months later. Questionnaires from this hospital were, nevertheless, analyzed along with the others on the assumption that the geographic service area of the hospital remained the same.

not considered because their number was believed to be negligible.* Of the 26 hospitals chosen, 21 participated in the survey. This number included the larger and more important institutions.

Procedure

Questionnaires were distributed, usually by a nurse who was prepared to explain the study, to all mothers on the obstetrical service on the second or third postpartum day. Questionnaires were collected after 20 to 30 minutes. Most respondents were able to handle the questionnaires without help. The survey was apparently well received by respondents and members of the staff in all participating hospitals.

Completeness of the Sample

An estimate of completeness of coverage was made by comparing registration data on resident births † for the study area with returns from the survey itself. Losses from the sample occurred because of refusal of some hospitals, and a few respondents, to participate. There was, in addition, selective lack of response to specific sections of the questionnaire, partly because three hospitals requested that some questions be deleted. Questionnaires which did not provide the address of the respondent were excluded from the study.‡

Of the 799 births reported for the study area, usable schedules were received for 609, or 76 per cent. A sufficiently high proportion of respondents answered the various combinations of questions on which the analyses are based, to assure a valid picture of the distribution of prenatal care.**

Validation

The accuracy of responses was tested by comparing, in a sample of cases, selected items of information provided by the respondent with corresponding data in medical records made available by hospitals and physicians. For a sample of 64 clinic patients, and 52 private patients, there was agreement between data from the two sources concerning quantitative adequacy of care in 84 and 94 per cent of the cases, respectively. This level of agreement with respect to the most complex part of the questionnaire suggests that the data are sufficiently valid and precise to show difference in patterns of care between socioeconomic groups.

Findings

Four aspects of prenatal care have received attention in the analysis of findings. These are designated as "quantitative adequacy," "content" of care, "health education," and "dental care."

The quantity of care received was considered satisfactory for 65 per cent of the respondents. In only 7 per cent of cases was the "content" of care rated as unsatisfactory. It may be concluded that, in the great majority of cases when an expectant mother placed herself under medical supervision, the examinations about which information was sought were routinely performed. Health education was rated "good" among 62 per cent of respondents who had had medical supervision. A dentist was visited at least once during the current

* This is supported by the observation, made in connection with another study, that during a period of approximately five years only 0.6 per cent of neonatal deaths to residents of the study area occurred outside Metropolitan Boston.

† There was no attempt made to correct for multiple births or stillbirths.

‡ Respondents who did not give their address did not differ strikingly from those who did, with respect to source of care, month of first prenatal visit, education or family income.

** For all combinations of questions, with one exception, 85 per cent or more respondents gave the necessary information. Only 76 per cent of the respondents provided information on both income and prenatal visits.

Table 1—Adequacy of Prenatal Care by Socioeconomic Group of Census Tract of Residence

SES Group	Quantitative Adequacy: Total Reporting	Quantitative Adequacy: Per cent Unsatisfactory	Content of Care: Total* Reporting	Content of Care: Per cent Unsatisfactory	Health Education: Total* Reporting	Health Education: Per cent Fair and Poor	Dental Care: Total Reporting	Dental Care: Per cent Unsatisfactory
Total	558	35.0	538	7.1	543	38.3	586	57.8
I	57	68.4	57	12.3	58	41.4	65	84.6
II	180	46.7	184	5.4	186	38.2	191	74.4
III	177	24.9	166	8.4	169	41.4	182	45.6
IV and V	144	19.4	131	5.3	130	33.1	148	39.9

* Excludes respondents who did not receive prenatal care.

pregnancy by 42 per cent of respondents.* About 28 per cent of expectant mothers reported having had "trouble with teeth and gums" at some time during pregnancy. Of all respondents who reported dental trouble only 52 per cent consulted a dentist. Only 38 per cent of those who reported not having had trouble with their teeth during pregnancy had visited a dentist, presumably for preventive care.

1. Socioeconomic Class of Census Tracts

Table 1 and Figure 1 show that there are distinct correlations between most aspects of prenatal care and the socioeconomic level of census tracts of residence as indicated by the combined score of socioeconomic status.

The quantity of care was rated "unsatisfactory" for 68 per cent of respondents in the lowest socioeconomic group, while only 19 per cent of respondents in the highest two groups received "unsatisfactory" care. No prenatal care was received by 8 per cent of respondents in the lowest socioeconomic group. All respondents in the highest two groups

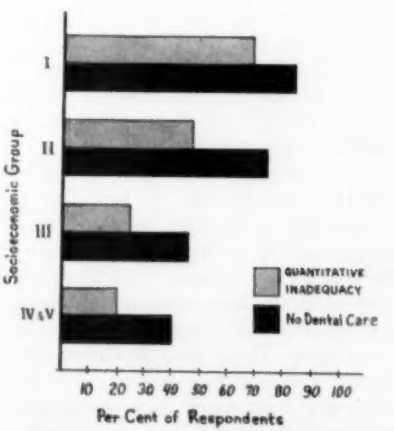

Figure 1—Adequacy of Prenatal Care by Socioeconomic Group of Census Tract of Residence

* Since this report was prepared for publication, one hospital in which prenatal clinic patients are routinely referred to the dental clinic, checked the survey questionnaires against its outpatient records. Evidence was found that, of the six among the 11 clinic patients included in the survey who said they had no dental care, three had been seen by a dentist. It was presumed by the hospital that the remaining three had had dental care as well. This has resulted in an underestimate of 0.5 to 1 per cent for all patients in the survey. Since none of the patients in question fell into the lowest or highest socioeconomic groups, this underestimate does not affect the range of unmet dental need. A check at other hospitals with large prenatal clinics revealed that they do not routinely refer patients to the dental clinic. This underestimate suggests that the questions regarding dental care may have been misunderstood by some respondents, and that the wording of the question should be reviewed before a similar questionnaire is used again.

Table 2—Adequacy of Prenatal Care by Family Income and Education of Mother

Income or Education	Quantitative Adequacy		Dental Care	
	Total Reporting	Per cent Unsatisfactory	Total Reporting	Per cent Unsatisfactory
	Yearly Family Income in Dollars			
Total	464	35.6	555	58.0
0–1999	66	62.1	70	82.9
2–2999	94	43.6	101	66.3
3–3999	122	35.2	125	64.8
4–4999	80	30.0	79	48.1
5–6999	58	22.4	58	37.9
7000 +	44	6.8	47	25.5
	Education: School Years Completed			
Total	517	36.4	546	57.7
0–8	46	63.0	57	89.5
9–11	106	57.6	116	82.8
12	261	31.0	264	50.4
13 +	104	16.4	109	32.1

had received some prenatal care. The "content" of care was considered "unsatisfactory" in a relatively small proportion of respondents and the differences between groups were less striking but, nevertheless, statistically significant (P less than 0.01). There was no significant difference between socioeconomic groups in the distribution of "good," "fair," and "poor" ratings for health education (P less than 0.2).

No dental visits were made during the current pregnancy by 85 per cent of respondents in the lowest socioeconomic group, and by 40 per cent of those in the highest two groups. The frequency with which "trouble with teeth or gums" was reported was roughly the same for all groups. There were, however, very marked between-group differences in the frequency with which both therapeutic and preventive dental care were sought. The proportion of mothers who did not receive presumably indicated dental care ranged from 75 per cent in the lowest socioeconomic group to 29 per cent in the highest two groups. With regard to preventive dental care, the range was very wide. In the lowest group, 90 per cent of respondents who reported no dental trouble did not visit a dentist, and in the highest group 44 per cent of such respondents received no dental care. (P less than 0.001 for both therapeutic and preventive care.)

The relationship between socioeconomic status and the receipt of preventive and therapeutic dental care is presented in greater detail below.

Socio-economic Group	Per cent Respondents not Receiving Therapeutic Care	Per cent Respondents not Receiving Preventive Care
Total	47.6	61.9
I	75.0	90.2
II	55.2	82.7
III	39.1	47.8
IV and V	29.0	43.6

2. Family Income

One important objective in designing the survey was to provide an opportunity to determine the socioeconomic status of respondents in two ways: (a) by obtaining information on family attributes from the respondent, and (b) by assigning the characteristics of the census tract of residence to the family. By relating adequacy of prenatal care first to one and then the other of these measures of socioeconomic rank, it would be possible to determine whether census tract characteristics may be used in place of individual social and economic information with little loss in accuracy or discrimination.

Table 2 shows that, in general, the relationships between the various aspects of prenatal care and family income are similar in direction (though perhaps a little more pronounced in degree) to those already shown to exist between the adequacy of prenatal care and socioeconomic status as determined by applying census tract characteristics.

These relationships are shown graphically in Figure 2. In this figure, two

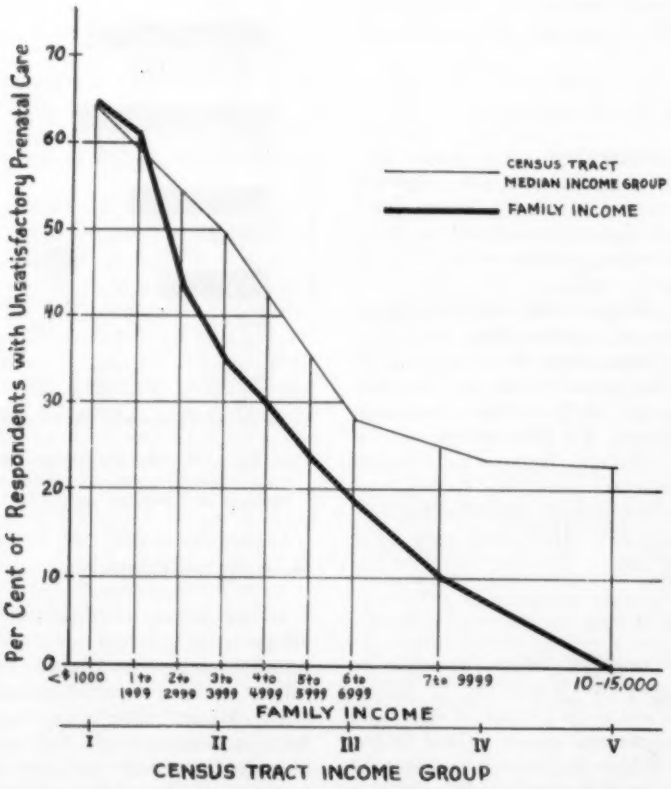

Figure 2—Per cent of Respondents with Unsatisfactory Prenatal Care According to Family Income and Median Income Groups (Based on Census Tract of Residence)

scales are shown on the abscissa; one shows the five equal intervals of median income of census tracts, and the other shows family income. Similar relationships between prenatal care and income are found when either of the two methods of determining income status are used.

There was no association between family income and occurrence of reported "trouble with teeth or gums." There was, however, a very close association between dental care received, both therapeutic and preventive, and family income. No dental care was received by 83 per cent of respondents with family incomes below $2,000, while 26 per cent of respondents with incomes of $7,000 or more had not made dental visits.

3. Education of the Respondent

The relationships between the adequacy of prenatal care and education of the mother (Table 2) do not differ materially from those already shown to exist between prenatal care and family income.

The findings would seem to indicate that there is a rather sharp distinction between respondents who complete high school and those who do not. In addition to the effect of the educational process itself, this phenomenon may be due to correlation between not completing high school and several factors (personality, intelligence, marital status, age, income, parity, etc.) which may affect prenatal care.

4. Source of Care

Quantitative adequacy was rated unsatisfactory in 18 per cent of private patients and in 59 per cent of those who received prenatal care at a clinic (P less than 0.001). Differences in scores of content of care were less marked and of borderline statistical significance (P less than 0.05). There was no significant difference between the two groups in the adequacy of health education received. Clinic patients tended to report dental disease more frequently, but had significantly less therapeutic and preventive dental care. These differences may be attributed to the fact that mothers in more favored socioeconomic circumstances receive care from private physicians. If quantitative adequacy is cross-tabulated by source of care and education of mother, it appears that for each education group a higher proportion of private patients receive satisfactory care (Figure 3).

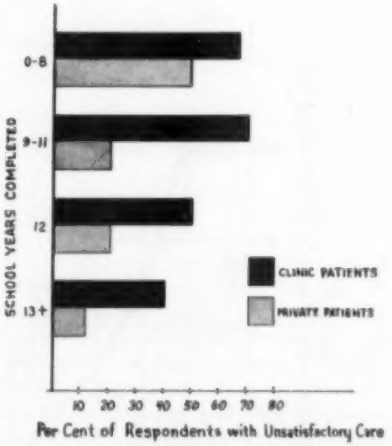

Figure 3—Quantitative Adequacy of Prenatal Supervision by Education of Mother and Source of Care

Summary and Conclusions

1. The direct relationships between adequacy of prenatal care and socioeconomic status found in this study are similar to those reported in other surveys. Marked differences were found between socioeconomic groups in the amount of prenatal care obtained, and in the receipt of dental services, both therapeutic and preventive. There was less difference between groups with re-

spect to content of prenatal care and health education.

2. Experience in this study indicates that the use of a self-administered questionnaire is a relatively simple, efficient, and inexpensive method for collecting information about prenatal care in the community at large. That information obtained in this way is reasonably valid is evident from comparison of information provided in the questionnaires with medical records of both private and clinic patients. This suggests that the data are reliable, and should be repeatable by different observers, and comparable with similar data gathered periodically in the same community or in different communities. In effect, the data constitute direct measurement of the amount of care received which, by reference to generally accepted standards of antenatal supervision, provide a direct measurement of unmet need for medical care.

3. The findings suggest that a satisfactory socioeconomic classification of families may be obtained by using average census tract characteristics in place of social and economic information obtained from individual respondents. This method should permit comparative analysis of a variety of morbidity, mortality, and other statistics which can be related to census tracts but for which socioeconomic information on an individual basis is not available. It also allows geographic delineation of areas of relatively high and low unmet need. Furthermore, the method is widely applicable since there are more than 90 metropolitan areas accounting for nearly 50 per cent of the population of the country on which census tract information is available.[14]

4. By relating unmet need to socioeconomic status, it is possible to determine a baseline for its distribution within the community. Repeated studies of this nature carried out at intervals of time in the same community might reflect the effectiveness of programs established to meet medical needs by demonstrating significant changes in the initial pattern of unmet need. Improvements in the provision and effective use of medical services might become evident in one or both of two ways. The general level of unmet need should be reduced, and the differences between socioeconomic groups should become less marked. It must be recognized that, while this and similar indexes provide some measure of the extent of unmet need for medical care and show its distribution, they do not identify the various factors responsible for the failure to meet medical needs, nor show their relative importance.

5. The marked variations in adequacy of prenatal care among the various groups in the community, as found in this study should be a source of concern to hospitals, public health organizations, and the medical profession. Each group has responsibilities for education of the public concerning the importance of adequate prenatal supervision. Deficiencies in dental care are marked, and would seem to deserve special attention. Studies should be undertaken, possibly on a cooperative basis among various interested agencies, to further clarify reasons for inadequacy of prenatal care.

APPENDIX

Notes on Method of Rating Adequacy of Prenatal Care

Trimester of first visit to the doctor has been used as another index of adequacy of care.[5] The more complex system of scoring adequacy of care in this study is based on the premise that other factors of care involved including numbers and spacing of visits are important components of adequate care and that measurement of one factor alone may not be as valid.

In an attempt to ascertain whether the more complex procedure is justified, tests were made to determine the relationship of the measure of adequacy used in this study, and a measure based on whether the first visit to a physician was made during the first trimester

of pregnancy. There was agreement between the two ratings in 84 per cent of the cases. In 11 per cent of cases, the rating based on trimester of first visit was more favorable than that based on the composite score; in 5 per cent of cases, it was less favorable. The point correlation coefficient for the two methods of rating was 0.643.

When quantitative adequacy of prenatal care was related to family income or education of the mother, similar curves were found with both methods of rating. However, while per cent rated adequate in each socioeconomic group is consistently higher when trimester of first visit is used, this relative overestimate is not equal in all groups.

In order to determine the relative validity of these two measures or of other measures of adequacy of prenatal care, studies of relationships to maternal and perinatal well-being would probably be necessary. Lacking such information, the composite rating system was adopted for this study on the assumption that it is more valid.

More detailed information about comparisons between the two methods of rating may be obtained from the authors.

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What is the present and the potential impact of home care programs on the general hospital in providing medical care? The authors explore four aspects of the problem, and indicate that home care is not a substitute for economy, but an extension of the hospital outward into the community.

HOME CARE PROGRAMS—THEIR IMPACT ON THE HOSPITAL'S ROLE IN MEDICAL CARE

Peter Rogatz, M.D., M.P.H., F.A.P.H.A., and Guido M. Crocetti, M.A.

ORGANIZED HOME medical care programs have attracted increasing attention in this country since the pilot project in this field at Syracuse University College of Medicine in 1940,[1] and more particularly since the establishment of Montefiore Hospital's program in New York City in 1947.[2] Because of the variety of plans now operating, the term "home care program" has been applied in many different ways. Some plans provide chiefly social and nonmedical services to homebound patients; others provide medical services, with or without nursing and social services. Some are operated by—or in close liaison with—general hospitals; others are operated by agencies or institutions other than general hospitals. Comprehensive prepaid medical care plans in various parts of the country, such as the Health Insurance Plan of Greater New York, are providing home medical care to an increasing number of persons.

All of these types of programs have useful services to offer to their communities, and it is not the purpose of this paper to compare the merits of different types of plans. The following discussion is limited to those programs operated by general hospitals and designed to render medical and related nursing and social services to patients in their homes. The views presented here are based in part on a study conducted by the authors for the Hospital Council of Greater New York.[3]

Home care programs are becoming a significant feature of hospital service in many communities throughout the country, and this reflects a growing concern on the part of hospitals with problems of medical care. What is the present impact—and more important, the potential impact—of home care programs on the role of general hospitals in medical care? Four aspects of this question are explored here: (1) impact on hospital bed utilization; (2) impact on professional services in the community at large; (3) impact on professional education in the hospital; and (4) provision of home care to other than needy patients.

Impact of Home Care Programs on Hospital Bed Utilization

According to a widely held misconception, a hospital operating a home care program will, in effect, save the use of one hospital bed for each patient receiving home care. Thus, a home care program with an average census of 50 would

offer a saving of 50 hospital beds, and the hospital would be able to close an existing 50-bed wing or drop its plans for building a new 50-bed wing. Stated differently, if the average daily home care census is multiplied by 365, thus deriving the number of "home care patient days" per year, the hospital might conclude that an equal number of inpatient days—at considerably greater cost—have been saved.

Such reasoning, whether it relates to utilization of existing beds or to capital expenditure for future beds, is fallacious. Most home care programs serve chiefly patients with long-term illnesses. The length of stay on home care for such patients is usually from six to twelve months, and frequently longer; few, if any, general hospitals will tolerate inpatient stays of this duration. Undoubtedly a home care program solves many of the hospital's problems concerning disposition of long-term patients, but one can hardly believe that a patient who spends 12 months on home care would otherwise have occupied a hospital bed for 12 months!

A rough estimate, previously derived by the authors,[4] indicated that about one-fourth of the total number of patient days of care rendered by a home care program may represent general hospital inpatient days saved. It must be emphasized, however, that any such ratio will vary according to the admission and discharge policies of each particular hospital and home care program, and according to many other specific community factors. It would be unwise to apply uncritically, in any situation, the 25 per cent estimate cited above. Indeed, a recent paper by Littauer and Flance [5] offers an estimate of about 75 per cent.

However, regardless of whether the saving in general hospital bed utilization is one-fourth, one-half, or even more than half of the home care census, there seems little doubt that the saving will be substantially less than 100 per cent of the home care load. We must not offer the home care program as a money-saving or bed-saving device, but rather as an addition to existing medical care services. If a community or hospital comes to regard its home care program as an economy measure, it is likely that the program will become a "dumping ground," that the expenditures necessary to maintain high quality service will be denied, and that the program will do more harm than good to the cause of improved medical care.

Impact on Professional Services in the Community

According to traditional concepts, the general hospital is usually limited to providing service within its walls to bed patients, or in its outpatient department to low-income ambulatory patients. Newer concepts, however, visualize the hospital as having a larger role in the organization and provision of medical services. It is becoming apparent that medical services must be organized on a more rational and more efficient basis than one in which every physician practices alone and every hospital is forbidden to function outside a rigidly circumscribed area of professional activity. The home care program is representative of these newer concepts, and calls for the hospital to extend its services into the community, utilizing a team of physicians and other professional personnel to care for homebound patients who cannot be served adequately in the outpatient department and who do not require hospitalization. Let us examine the ways in which a hospital, through its home care program, can exert a constructive influence on the quality of medical, nursing, and social services in its community.

Medical Services—The impact of a home program on medical services throughout its community depends pri-

marily on its contact with physicians. The most direct contact would occur in a program that invited active participation by private practitioners, and because of the potential importance of that type of program the final section of this paper is devoted to a discussion of such a proposal. However, to date relatively few home care programs have moved in this direction, and most programs limit eligibility to persons who cannot pay for private care. Such programs provide medical care by (a) residents, (b) other salaried physicians, or (c) community practitioners working part-time in the program. The effect of a home care program on the quality of medical care in its community depends to a considerable degree on which of these three methods of employing physicians is followed.

(a) A home care program staffed by residents usually obtains such physicians from the medical service of the hospital with which it is affiliated, with each resident assigned to the program for a specified part of his year of training. In some instances residents may be regarded merely as personnel to provide service; this should not occur. The home care experience should be a planned part of the residency training program, and should involve supervision by mature clinicians, just as is done on the inpatient service. The exposure to home care should stimulate the resident's awareness of the social and economic aspects of illness and prepare him to understand and cope with such problems in his future practice. Furthermore, the resident who has had experience in a home care program is likely to have an increased appreciation of the hospital in its broader role as a community agency. Presumably his future activities as a practicing physician in the community will reflect this.

(b) Some home care programs hire physicians on a full-time basis. This has usually not worked out very satisfactorily. Unless a program is financially self-sufficient (which is rarely, if ever, true), it usually cannot afford salaries adequate to attract competent physicians for full-time work in situations where residency credit is not given. Inadequate salaries, obviously, will attract inferior physicians, and this has been the experience of some programs. Of course, it is possible for a home care program to hire such physicians and, by giving them proper supervision over a period of years, to improve their clinical abilities. However, the more direct and more predictable result would be a lowering of the quality of care since the program, in effect, is subsidizing inferior physicians.

(c) Some programs employ practicing physicians on a part-time basis, and this seems to lend itself more readily to the selection of competent, well trained doctors. Physicians who have recently completed their residency training (not necessarily in connection with the home care program itself) and who are starting in private practice are often available for such part-time activity. Payment may be either as a salary, or on a fee-for-service basis. The former is probably preferable since it tends to promote a closer identification with the program as a whole, and to encourage participation in "team" activities (such as conferences) that are not encompassed by the usual fee-for-service remuneration. Although the employment of part-time physicians seems more likely to attract competent personnel than the employment of full-time physicians, inferior men will find their way into any organization unless standards are high, and are carefully observed.

Nursing Services—Home care programs usually contract with existing nursing agencies in their communities to provide home nursing care, rather than employ special nurses of their own to make such visits. There are two major reasons for this: (1) there is a

widespread shortage of nurses; and (2) existing agencies have had considerable experience in the provision of home nursing service, which makes them well suited to work with home care programs, in terms of objectives and in terms of practices and procedures. This holds true for voluntary nursing agencies, for the nursing divisions of local health departments, and for the combined type of nursing agency. In any given community the type of agency that will be utilized usually depends on local conditions. The following discussion may be generalized to any of these different types of agency.

Most nursing agencies are eager and able to maintain high professional standards and to render high quality service. However, without reflecting on the agencies themselves, it must be recognized that the caliber of service rendered inevitably will be related to the caliber of the physician requesting the service. This is equally true for the physician in private practice and the physician working in a home care program. The nursing agency is seldom in a position to contradict the physician who incorrectly prescribes medications or other therapeutic procedures for the agency to carry out. Except in instances of flagrant malpractice, a nursing agency will usually fulfill orders for home nursing care from any licensed and registered physician in its community. Since hasty diagnosis and symptomatic treatment exist widely in many communities, the services rendered by nursing agencies will reflect such practices, and conversely, they will reflect careful diagnosis and rational treatment when they are practiced.

A general hospital, through its home care program, can affect nursing services in the community in several ways. First, the skills of the physicians and the policies and procedures of the program will have a very direct impact on the quality of nursing care, as indicated above. Second, and really more important, the long-term educational effects on physicians who have served in the program will presumably enhance their ability to utilize community nursing agencies properly throughout their professional careers. Third, the exposure of nursing students to the home care program will be an important factor in determining their future interests and skills within their own profession (this is discussed further in the next section of this paper). Finally, since the board of directors of a voluntary nursing agency may very well include hospital representatives, the hospital will be in a position to use its home care experience as the basis for constructive action within the nursing agency, at the policy-making level.

Social Agencies—For several reasons the quality of service rendered by social agencies tends to be less dependent upon the practicing physician in the community than is the case with nursing agencies. First, most social agencies accept referrals from varied sources, and are not limited to referrals from physicians. Second, a social agency usually has the responsibility for making its own diagnosis of any given problem, or at least for refining the tentative diagnosis that forms the basis for the referral. Third, a social agency usually determines its own plan of management, and initiates appropriate action.

Despite these factors a hospital, through its home care program, may have a significant effect on the quality of services rendered by social agencies. Many physicians often neglect to refer to social agencies certain patients who might benefit considerably from such referral. By training and encouraging its home care physicians to be aware of social needs and resources, the hospital will help to assure appropriate referrals to community agencies on a day-to-day basis.

Second, the interrelationship between

coexistent medical and social problems has led to the concept of the medical-social "team," with the physician functioning in concert with the social case worker and other professional personnel. Most physicians, however, are unprepared by education, by experience, or by inclination to carry out a long-range plan of patient management in partnership with a social worker or social agency. The hospital, through the medium of its home care "team," will be preparing physicians to function more effectively in such situations.

The hospital's potential role in education of social work students is also an important one, and will be discussed below. Finally, as was noted with regard to nursing agencies, hospitals are often represented on the boards of directors of social agencies. Although, in the past, hospital thinking has not always been mature on questions affecting social agencies, those hospitals that operate home care programs may reasonably be expected to have a better understanding of the objectives and activities of such agencies.

The preceding discussion clearly indicates that home care programs can be a significant contributing factor in the developing role of the general hospital as the focus of medical and health services in the community. Hospitals, however, must recognize and accept their responsibility for leadership in this field, or leadership will arise elsewhere.

Impact on Professional Education in the Hospital

The provision of health services and the education of students in the health professions cannot readily be divorced, and the hospital's changing role in medical care must, of necessity, be matched by changes in professional education within the hospital. It is not the purpose of this paper to present in detail the mechanics of providing home care experience for professional students. Briefly, however, this would involve the assignment of medical, nursing and social work students to the home care program, placing each under the direct supervision of qualified personnel in his own profession, and maintaining a close working relationship between the students (and instructors) in the different professions. Let us consider the educational advantages that might be expected from such an experience.

Medical Education—The very least that a home care program offers to the medical student is exposure to the technical and scientific problems of caring for patients at home. This is a facet of medical practice that is not often taught in school. Can an adequate physical examination be done at home, and what compromises with hospital or office technic may reasonably be undertaken? What nursing services should be provided at home? Can the family be taught to help with care of the patient? What other professional services may be useful? What are the indications for hospitalization of the homebound patient?

Probably of greater importance is the education of medical students concerning the relationship between long-term illness and socioeconomic conditions. The home care program provides an ideal means of exposing medical students to aspects of illness that are not often emphasized in their curriculum.[6] What does it mean to a family—economically, socially and psychologically—to have one of its members ill and nonproductive for a prolonged period of time? Loss of income, increased burdens for other family members, lack of companionship, absence of parental authority, interruption of outside friendships, and many other factors may be brought to the attention of the student, broadening his understanding of the management of patients with long-term illness.

There are also many significant pub-

lic health aspects of the relationship between long-term illness and socioeconomic conditions that should be brought to the attention of medical students. The home care program is an excellent vehicle for exploring many epidemiologic and other public health questions. Here, as in other areas, education and research can be mutually beneficial.

Nursing Education—The student nurse, like the medical student, needs more understanding of the socioeconomic aspects of illness. A visiting nurse, sent into a patient's home by the physician for some specific purpose during an illness, should be able to recognize basic social problems and to describe them in her report to the physician. Furthermore, in the home care situation the nursing student will often encounter, on the part of family members, deeply implanted resistances to physical contact with the ill, stemming from a variety of cultural and psychological attitudes. Learning to cope with these problems will enhance the future professional performance of any nurse, regardless of whether she eventually enters public health nursing, hospital nursing, or any other branch of the profession.

In addition, because the nurse's professional responsibilities involve primarily the application of technics rather than diagnosis or initiating plans for management, it is especially important that nursing students learn the technics that must be applied in the home, how they differ from those used in the hospital, and what modifications of hospital technic are appropriate. Also of importance is the opportunity for the nursing student, in the home care situation, to acquire experience in teaching family members the technics of home nursing and in working cooperatively with family members.

Social Work Education—Although present methods of education in social work do provide supervised field experience for the student, such experiences are frequently restricted to an agency office. The opportunity to observe family relationships in the home and to understand the impact of illness on these relationships would be valuable for any social work student, regardless of whether he or she eventually enters the field of medical social work. This type of experience would be particularly useful for those students who will later follow careers in family case work, either in or out of hospitals. Finally, as has been pointed out regarding other professional students, the early introduction to the "team" approach and development of the ability to work cooperatively with members of other disciplines would be of inestimable value.

Interprofessional Education—Many studies have been done and much has been written on the complex subject of the functioning of the interdisciplinary clinical team and the role of the physician in such a team.[7] It is not appropriate to discuss here the skilled leadership that the physician must exercise in order to derive for his patients the greatest benefits from the combined skills of so-called "para-medical" personnel. It is sufficient to note that members of many different professions are increasingly being called upon to function efficiently as members of a complex medical team. If students of medicine, nursing, social work and other professions are placed together where they and their instructors are part of such an interdisciplinary team, we can anticipate that they will learn to meet this aspect of their professional responsibilities with increased skill and understanding.

Home Care Programs and Private Patients

The usual practice in this country, with rare exceptions, has been to limit home care programs to persons who can-

not pay for private medical care. Yet, it is generally acknowledged that these programs have brought improved medical care to those patients they have served, and if this is true one may reasonably inquire why the benefits of such programs should not be extended to self-supporting patients. The question is particularly important since this may be the only way in which home care programs can become financially self-sufficient.

Many explanations have been offered to show that home care programs need not—or should not—be made available to patients of private physicians, but all appear to be variations of two basic assumptions, both of which we believe to be incorrect. One of these assumptions may be stated briefly as follows:

> The self-supporting patient simply does not need the services of a home care program. He has his private physician, who will visit him at home as often as necessary. There are nursing agencies in the community that will provide care in accordance with his physician's orders, and private laboratories that are similarly available. As for social case work, the private patient has no need for this at all; he does not require financial aid, he can arrange for his own housekeeper, and he would generally find the social worker to be more meddlesome than helpful.

The first answer to this type of argument is that many physicians, in their management of homebound patients with long-term illnesses, do not avail themselves of everyday community resources such as visiting nurse service, or do so only sporadically and without taking full advantage of the agency's potential. Furthermore, services such as physical therapy and occupational therapy, which are often provided through home care programs, are relatively scarce in most communities and are therefore even less frequently utilized by physicians on behalf of their private patients.

The question of whether the private patient has any need for social case work service arises largely because the original focus of the social worker's attention was the economically deprived person. Modern concepts of social work, however, encompass a broader sphere of activity. Let us acknowledge that the private patient may not require financial assistance; this is only one of many social work functions, and there are many from which he and his family might benefit. The social worker may obtain for him services of which he might otherwise be entirely ignorant, such as those of a skilled homemaker, and may render substantial help with many other more or less mechanical problems arising out of the home care situation.

More important, however, is the fact that the private patient and his family are in no way more immune than the economically dependent patient to the emotional strains that often accompany prolonged care at home. In such a situation the skilled case worker will recognize the need for preventive or therapeutic counseling or guidance services, and will either provide such service personally or will know how to arrange for it. Of course, there are not enough social workers or counseling personnel to meet the average community's needs, but the increased demand for such services that would probably result from the inclusion of private patients in home care programs would be a healthy stimulus to improving the supply of personnel. And, incidentally, the same can be said of other paramedical personnel.

A second assumption that we would like to question may be stated thus:

> If a self-supporting patient were to be served by a home care program he would be forced to relinquish his private physician and place himself in the hands of the program's staff, just as if he were a ward patient in the hospital. He would thus be deprived of the benefits of his personal relationship with the physician of his choice, and of the benefits of that physician's long-standing familiarity with his clinical history. Furthermore, this would infringe

upon the financial relationship between patient and physician in a case where the patient can afford to purchase medical services privately.

The answer to this line of reasoning is simply that the patient would not be obliged to relinquish his private physician. There is no reason why a home care program cannot be organized so as to provide service to both economically dependent and self-supporting patients, following the general pattern of hospital inpatient services. The present method of serving economically dependent patients in the home care program would remain unchanged, the patient receiving his medical care without cost, from physicians on the staff of the program, and receiving nursing care, laboratory service, and all ancillary services at little or no cost.

By contrast, the private patient would be "admitted" to the program by his private physician in the same sense that he is admitted to the hospital for inpatient care. He would receive all medical care from his own physician, who would render a bill directly to him, just as if he were visiting the patient at home in the absence of an organized program. The various other services that form part of the total home care program, such as nursing, physical therapy, occupational therapy, social service, laboratory service, homemaker service, and so on, would be provided only on the orders of the private physician. The patient would be billed for such services by the home care program, either on a per diem or per service basis. Of course, a plan such as this would require that the physician work closely with other professional members of the home care staff, but this does not seem much for a patient to ask of his physician in order that he have access to the comprehensive range of services available through a well organized home care program.

The extension of home care programs to include self-supporting patients would seem, therefore, to be an extremely logical and constructive plan, and one which need in no way compromise the personal patient-physician relationship. Apart from the benefit to patients, the financial advantages to the home care program, which would otherwise probably exist only through continuing subsidy, are obvious. It is to be hoped that hospitals and physicians will find ways to cooperate in developing such programs.

Summary and Conclusions

The general hospital has a major role to play as a community agency; it is logically and potentially the center of health and medical services in its community. As this concept becomes more fully and more widely understood, the activities of general hospitals begin to transcend the traditional, circumscribed limits under which they have operated in the past. The establishment by a general hospital of a home medical care program is one symptom of the hospital's growing awareness of its broader responsibilities. Furthermore, the home care program itself may tend to increase the awareness of community responsibilities on the part of the hospital's medical staff, its administrative staff, and its board of directors.

Home care programs may be less effective in saving hospital bed utilization than is often suggested. They should be regarded primarily as a qualitative addition to community health services, rather than as a cheap method of saving hospital beds.

Home care programs should bring hospitals into closer relationship with the nursing and social agencies in their communities, and should bring medical practitioners into closer relationship with hospitals. These programs also offer excellent opportunities for education of students in medicine, nursing, and social work.

Despite preconceptions to the con-

trary, home care programs have much to offer to self-supporting patients. Such patients can be served by home care programs without interference in the professional and financial relationship between patient and physician, and they should derive considerable benefit from this type of program. Furthermore, this would offer home care programs an alternative to the continuing subsidies that have so far been necessary in order for these programs to exist. The establishment of home care programs and the inclusion of self-supporting patients and their private physicians within the framework of such programs appear to be logical steps in the development of the hospital's role in medical care.

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Latin-American Microbiology Congress

A first Latin-American Congress of Microbiology is being organized by the Mexican Association of Microbiology. Representing also the second Mexican Congress, the meeting will be held at the School of Medicine of the National University in Mexico City, October 12–19, 1958. Scientific papers on general, medical, veterinary, and industrial bacteriology, virology, immunology, mycology, and parasitology are being accepted.

The opening day is devoted to registration, a reception, and an evening "festival." For the final day an excursion to Cuernavaca, Taxco, and Acapulco is planned. The scientific sessions occupy the four days between.

Further information, especially in relation to offering papers, from the general secretary, Dr. José Sosa-Martinez, Atlanta 139, Mexico 18, D.F.

The need to develop more objective, precise means of delineating and defining behavioral abnormality is the focus of this report. In an endeavor to explore the spectrum of child behavior, the authors undertook a pilot study. Methods and tentative findings are considered.

AN EPIDEMIOLOGIC STUDY OF BEHAVIOR CHARACTERISTICS IN CHILDREN

Rema Lapouse, M.D., M.P.H., F.A.P.H.A., and Mary A. Monk, Ph.D.

ONE OF the great psychiatric dilemmas of our time is the decision as to what is normal and what is abnormal in human behavior. Lacking specific tests to make the distinction, the diagnostician has recourse mainly to his clinical judgment which rests on his training, experience, perceptiveness, and theoretical persuasion. These in turn are limited by the present level of scientific knowledge, which has made it possible for hypotheses regarding the pathologic import of certain symptoms to be accepted without sufficient testing or validation, to be passed from teacher to pupil, to persevere in the literature, and to influence a succession of therapies.

In child psychiatry, Leo Kanner points out that recorded symptoms "are of necessity those of selected groups and not of the total population of children"; and, he continues, "This selectiveness, in the absence of 'normal controls' has often resulted in a tendency to attribute to single behavior items an exaggerated 'seriousness' with regard to their intrinsic psychopathologic significance. The seriousness becomes attached to the signal regardless of what it announces and who announces it. The high annoyance threshold of many fond and fondly resourceful parents keeps away from clinics and out of the reach of statistics a multitude of early breath holders, nail biters, nose pickers and casual masturbators who, largely because of this kind of parental attitude, develop into reasonably happy and well-adjusted adults." [1]

The two major issues besetting all research workers concerned with the differentiation of the psychiatrically well child from the psychiatrically sick child are brought out in Dr. Kanner's statement, namely, the problems of method and definition. These issues are the focus of the present study which represents the exploratory phase of an effort to penetrate the barriers of selection and to broaden knowledge about the behavior, function, and adjustment of children who are not likely to be picked out of the community for psychiatric examination and therefore have little chance of contributing to the statistics of symptoms.

The methodologic difficulties in designing a study of the spectrum of child behavior and symptomatology are great. Most previous studies with similar objectives have utilized nonrepresentative samples and/or methods which cannot be replicated on other groups. This is

true of the mammoth retrospective analysis by Ackerson [2] in the 1930's of the case records of 5,000 children, and of the University of California study by Macfarlane, Allen, and Honzik [3] of the behavior problems of 126 nonproblem children.

Leaving aside for the moment methodologic considerations, the second, and without doubt the larger issue, is the question of definition. In research focused on the enumeration of pathologic symptoms in children it is obviously important to be able to define a pathologic symptom and to state the degree of severity and frequency a behavioral item must manifest before it is considered a symptom. Because of the variability, imprecision, and lack of universality in the definitions currently used to differentiate normal from abnormal symptoms and behavior, it appeared that the wisest course would be to avoid definitions of pathologic behavior and to develop instead a method for measuring the prevalence and interrelations of certain behavior characteristics of children.

It is our ultimate aim to extend the epidemiologic study of the behavior characteristics of children to a large representative group of children. The purpose of the larger study will be: (1) to gain accurate knowledge of the prevailing behavior of children in relation to age, race, sex, and socioeconomic level; (2) to determine the clustering of behavior characteristics; and (3) to correlate these characteristics with the general adjustment and functioning of the child in his environment. From a better perspective on prevailing behavior and its intercorrelations, we hope that deviations from the usual pattern might be more easily and adequately measured, and consequently that a more objective and effective means could be evolved to identify the psychiatrically sick child in the community.

The present report is an analysis of our pilot study designed to explore the best ways of approaching the larger project so that accurate and significant data may be obtained. In pursuing this aim a considerable amount of data have been collected; a partial analysis of these is presented here.

Method

The main concerns in designing the pilot study were the problems of definition, reliability, and validity. Solution of these problems was attempted through a four-phase program: (1) development of an interview schedule; (2) selection of a sample and conduct of the field study; (3) testing the reliability of the data; (4) testing the validity of the data.

The Interview Schedule

When the study was begun in the spring of 1955 the decision was made to use mothers as a source of information on child behavior. This was done with full cognizance of the hazards involved, namely, that the mother's report and interpretation of her child's behavior are a function of her standards, sensitivity, expressiveness, sophistication, interest, and anxiety. We were aware of the risk of introducing subjective factors which might detract from the validity of our findings. However, it was necessary to begin somewhere, and not only would it have been manifestly impossible to conduct intensive psychiatric examinations of hundreds of children, but in so doing we would have introduced another element of bias, the value judgment of the examiner. Our efforts were therefore directed first, to the formulation of a schedule which would elicit a maximum of objective response, and second, to the development of methods for testing the reliability and validity of the mothers' responses.

Three pretests on mothers, the last on a small representative sample, resulted

in extensive changes producing the final interview schedule used in the field study. This schedule contains 200 items with subdivisions and requires approximately an hour and a half per interview. It is designed not only to survey the behavior of the child who is the object of the interview, but also to gather census data on the parents of the child, information on the household and its occupants, and, finally, to elicit the interviewer's rating on the reliability of the informant.

The behavior survey reviews interpersonal and social behavior, intellectual behavior, body control and coordinative behavior, behavior relating to habits, and factors modifying or limiting behavior, such as physical handicaps, illness, fears and anxieties, and so forth. The adjustment of the child is investigated by asking the mother to place him on a series of 34 continua describing a five-point range of possibilities of adjustment from one extreme to the other.

Within the schedule most of the questions are of a short answer type, yes or no or multiple choice, and are designed to reveal not only absence or presence of a given behavior manifestation but also where necessary its frequency and intensity. At the completion of inquiry about each area of behavior, space is provided for write-ins so that the mother could be encouraged to add any information she felt had been omitted.

The Sample and Field Study

The sample on which the present study is based was systematically selected from addresses in the 1955 Buffalo City Directory and a list of new constructions in 1955 in Buffalo.* Every 75th address, using a random start, was designated for the sample, yielding 1596 addresses.†

The sample was divided into four economic quartiles based on the median monthly rental of the census tract in which the address was located. The addresses were placed serially in 40 subsamples of about 40 addresses each so that each subsample contained addresses in four different economic quartiles of the city. The subsamples were assigned randomly to the interviewers so as to insure that any interviewer effect would be distributed at random throughout the city.

A manual of instructions and definitions was prepared for the use of the interviewers who were carefully trained in the use of the questionnaire, and carried out practice interviews (some under supervision through a two-way screen) before going into the field.

Interviewing took place between July and December, 1956. At each assigned address the interviewer contacted someone in every household and interviewed the mother or mother-substitute if any children aged 6 to 12 were living in that household. Just before the interview a letter was sent to the selected address explaining the reason for the survey and assuring the mothers of complete anonymity. In addition, the interviewers carried information identifying themselves and their sponsors. These precautions plus the fact that most mothers seemed to enjoy talking about their children may have contributed to the high success in obtaining interviews. Interviews were obtained with 482 mothers representing 94 per cent of the households where interviews should have been possible.

The study was limited to children aged 6 to 12. Since in any given household it was likely there would be more than one child in this age range, a

* We are indebted to Dr. Abraham Lilienfeld, Roswell Park Memorial Institute, Buffalo, N. Y., for permiting us to adapt for our use the sample developed in the course of his work supported by Public Health Service Grant CS 9408, and for help in other methodologic aspects of this study.

† Omissions from the Directory and from the new construction list were also sampled.

system devised by Kish [4] was used to insure objective selection of the child about whom the information was to be obtained. Each address was assigned a selection table in whose use the interviewer was instructed.

To give adequate representation to children in larger households, it was necessary to weight the interviews. A weight of one was given to an interview taken where there was only one child between 6 and 12; two where there were two such children, and so forth.

The information from the questionnaire was coded for IBM cards. As estimated by spot check, the reliability of the coding was 0.90 or higher. Entire recoding was done if the discrepancies between coding and check-coding were greater than 10 per cent.

Sampling errors in this study were computed in a fashion similar to that described by Woolsey for a systematic sample of households in Hagerstown.[5] This method takes into account the clustering of interviews and the systematic selection of addresses. The sampling errors were about one and a half times greater than those calculated for a random sample of the same size.

Reliability and Validity Studies

In all statistical reports based on interview responses, questions as to the soundness of the data must be a source of concern. To find at least partial answers to the questions on reliability and validity of the present data, an attempt was made to check these through additional studies. Reliability was tested by reinterviewing 46 or about 10 per cent of the mothers cooperating in the original 482 interviews. The problem of validity was approached by a special study involving the correlation of responses of mothers and children. It appeared reasonable that partial validation of the mothers' answers would be obtained if the same questions were asked of the selected child. If both mother and child gave the same response or a response in the same direction, one could assume that the chances of the response depicting the actual truth were better than if the two answers were in opposite directions. The questions were selected from the original interview schedule and concerned the areas of behavior reported here. For those items where it was possible direct observations of the child's behavior were also recorded. A new sample, convenient rather than representative, was chosen from mothers and children who attended the outpatient clinics of two hospitals in Buffalo and the offices of several cooperating pediatricians. A total of 193 children aged 8 to 12 and their 193 mothers were interviewed separately and simultaneously by different interviewers, and the two interviews were later compared.

Results

The demographic characteristics of the weighted sample of 482 children correspond fairly closely to the characteristics of the total population of 6- to 12-year-olds in Buffalo. As is shown in Table 1, the composition of the sample is half male, half female; half fall into the 6- to 8-year-old group, half into the 9 to 12 group; half are in the

Table 1—Demographic Characteristics of Weighted Representative Sample of 482 Children Aged 6–12 in Buffalo

	Per cent
Males	49
Females	51
6– 8 years	50
9–12 years	50
Upper economic	51
Lower economic	49
White	85
Negro	15

two upper quartiles, half in the two lower; 85 per cent are whites, 15 per cent are Negroes.

For the following analysis we have chosen a small portion of the questionnaire which has to do with fears and worries, bed wetting, nightmares, temper loss, food intake, overactivity, restlessness, tics, stuttering, thumb or finger sucking, nail biting, and a group of other "tension phenomena."

Table 2 presents prevalence findings. Since the pilot study from which these results are drawn was designed primarily as an exploration of method, and not as a data-seeking device, the findings must be regarded as tentative at the present time. Nevertheless, it is worth while to examine the prevalence of some of the behavior characteristics a little more closely, to look at significant differences in distribution among various groups in the child population, and to discuss the implications of the reliability and validity studies as they may affect our data.

Table 2—The Prevalence of Some Behavior Characteristics in a Weighted Representative Sample of 482 Children Aged 6–12 as Reported by Mothers

	Per cent
1. Fears and worries, 7 or more present	43
2. Bed wetting within the past year	
All frequencies	17
Once a month or more	8
3. Nightmares	28
4. Food intake	
Less than "normal"	20
More than "normal"	16
5. Temper loss	
Once a month or more	80
Twice a week or more	48
Once a day or more	11
6. Overactivity	49
7. Restlessness	30
8. Stuttering	4
9. Unusual movements, twitching or jerking (tics)	12
10. Biting nails	
All intensities	27
Nails bitten down (more severe)	17
11. Grinding teeth	14
12. Sucking thumb or fingers	
All frequencies	10
"Almost all the time"	2
13. Biting, sucking or chewing clothing or other objects	16
14. Picking nose	26
15. Picking sores	16
16. Chewing or sucking lips or tongue or biting inside of mouth	11

The high prevalence, 43 per cent, of children with many fears and worries stands out sharply. On the basis of mothers' responses to 30 questions on a wide range of fears and worries, children were classified into two groups: those having six or less fears, and those having seven or more. Table 3 shows that 50 per cent of the girls and 36 per cent of the boys had seven or more fears and worries, the difference being significant at the 0.05 level. An interesting finding was that significantly * more Negro children, 63 per cent, than white children, 44 per cent, had a large number of fears and worries. Although no significant differences appeared, there was some tendency for younger children and those in the lower socioeconomic half of the city to have more fears than the older and economically higher groups.

Bed wetting occurring at any time within the year prior to interview was reported in over 17 per cent of the sample, and occurred once a month or more often in over 8 per cent. In the less frequent occurrences, no significant differences in distribution appeared by age, sex, race, or economic status. It was found, however, that about 8 per cent of boys 6 to 8 years old wet the bed two to three times a week or more often as compared with 2 per cent of

* All differences reported as significant are significant at the 0.05 level or beyond.

Table 3—Distribution by Sex, Age, Race and Socioeconomic Quartile of Fears and Worries in a Weighted Representative Sample of 482 Children Aged 6–12 as Reported by Mothers

		Per cent of Children with Specified Number of Fears and Worries		
		0–6	7 and Over	Total
Sex	Boys	64	36	100
	Girls	50	50	100
Age	6– 8	52	48	100
	9–12	63	37	100
Race (in Quartiles III and IV)	White	56	44	100
	Negro	37	63	100
Quartile	I and II	64	36	100
	III and IV	50	50	100

the girls in the same age group, the difference nearly reaching significance at the 0.05 level. Although the figure for boys is somewhat higher than that obtained by Blomfield and Douglas in the British survey [6] of children aged 7¾, the difference between boys and girls is in the same direction.

In examining (Table 4) the complex of seven behaviors which might be termed "tension phenomena," i.e. nail biting, nose picking, picking sores, chewing or sucking lips or tongue or biting inside of mouth, chewing, sucking or biting clothes and other objects, grinding teeth and sucking thumb or fingers, we found that about 30 per cent of the children were reported to have one of these manifestations, 20 per cent two, and about 16 per cent showed three or more. There were no appreciable differences between boys and girls, but a significant age difference appeared, 41 per cent of the 6- to 8-year-olds manifesting two or more of these behaviors as compared with 30 per cent of the children between 9 and 12.

Regarding the differences in distribution among the various subgroups of children in our sample (Tables 5 and 6), it was found that the 6- to 8-year-old group differs significantly from children aged 9 to 12 in the higher occurrence

Table 4—Distribution by Age of "Tension Phenomena" * in a Weighted Representative Sample of 482 Children Aged 6–12 as Reported by Mothers

	Per cent of Children with Specified Number of "Tension Phenomena"				
Age	0	1	2	3 or More	Total
6– 8	35	24	21	19	99
9–12	34	37	18	11	100
Total	35	30	20	15	100

* "Tension phenomena" as referred to above, comprise nail biting, nose picking, picking sores, chewing or sucking lips or tongue or biting inside of mouth, biting or sucking or chewing clothes or other objects, grinding teeth, sucking thumb or fingers.

Table 5—Distribution by Age of Certain Behavior Characteristics in a Weighted Representative Sample of 482 Children Aged 6–12 as Reported by Mothers

Age	Per cent of Children with Specified Behavior Characteristic			
	Night-mares	Temper Loss 2–3 Times per Week or More	Teeth Grinding	Nose Picking
6– 8	36	55	18	32
9–12	20	40	9	19
Total	28	48	14	26

of nightmares, frequent temper loss, grinding teeth, and nose picking. Significant differences appear also between the sexes in some areas. More boys are overactive and pick their noses, while a higher proportion of girls seem to have a larger number of fears and worries than boys. Differences by socioeconomic level have not been found to be significant, although there is some tendency for more fears and worries and more nightmares to be reported for children in the two lower economic quartiles.

With reports that almost half the representative sample of children aged 6 to 12 manifest many fears and worries and frequent temper loss, that almost a third experience nightmares and bite their nails, that between 10 and 20 per cent wet their beds, suck their thumbs and show tics or other evidences of tension, serious thought must be devoted to the implications of these findings. Does the high prevalence of these behavior characteristics, commonly considered indicative of psychopathology, signify that a large proportion of the children have psychiatric disorders? Or are these characteristics manifestations of developmental stress reactions occurring in essentially normal children? The answer to these questions, it seems to us, lies in the determination of the children's capacity to function effectively in their environment. A further task of this project is to study how well children function by correlating behavior characteristics with adjustment patterns. When this is done, it may be possible to make a meaningful interpertation of the prevalence findings reported here.

Table 6—Distribution by Sex of Certain Behavior Characteristics in a Weighted Representative Sample of 482 Children Aged 6–12 as Reported by Mothers

Sex	Per cent of Children with Specified Behavior Characteristic		
	Over-activity	Nose Picking	Seven or More Fears and Worries
Boys	57	33	36
Girls	42	19	50
Total	49	26	43

For the study on reliability, Table 7 lists in descending order the percentages of agreement on various behavior items in the responses of 46 mothers from the original interview to reinterview. Setting 90 per cent as an arbitrary cut-off point between good and poor agreement, it was found that consistency of response is increasingly good as one ascends the list of items: chewing or sucking lips, biting or sucking clothing, grinding teeth, bed wetting and tics to reach a high point of 98 per cent agreement on stuttering and thumb or finger sucking. The remaining items range from an 87 per cent agreement on nail biting and fears and worries to a low of 52 per cent

Table 7—Reliability Study: Percentage Agreement of Mothers' Responses on First Interview and Reinterview in a 10 Per cent Subsample of a Representative Sample of 482 Children Aged 6–12

	Per cent
1. Stuttering	98
2. Sucking thumb or fingers	98
3. Tics	95
4. Bed wetting	94
5. Grinding teeth	94
6. Biting, sucking or chewing clothing, etc.	91
7. Chewing or sucking lips or tongue, etc.	91
8. Biting nails	87
9. Fears and worries, 7 or more	87
10. Nightmares	83
11. Food intake	78
12. Restlessness	78
13. Picking sores	78
14. Picking nose	78
15. Temper loss, frequency	65
16. Overactivity	52

on overactivity. It appears that the items where the mother's reliability is highest are those which are concrete, objectively observable and have a high nuisance value as measured by social standards. With the exception of picking at sores and nose picking, the low agreement items are less easily defined as entities or are more dependent for interpretation upon subjective factors in the mother or child.

Table 8 indicates the findings of the correlation or first validation study. It must be borne in mind that the sample for this part of the study and the conditions under which the interviews were conducted were quite different from the original sample and setting. The original interviews were taken in the homes of the respondents; those for the correlation study were conducted under the aegis of medical authority. The sample in the first instance was representative; in the second, it was selected from

Table 8—Correlation Study: Agreement of Responses Between Mother and Child in a Selected Sample of 193 Children Aged 8–12

	Per cent			
	Agree	Mother Yes Child No	Mother No Child Yes	Total
1. Bed wetting	84	12	4	100
2. Thumb sucking	81	7	12	100
3. Stuttering	76	6	18	100
4. Biting nails *	70	4	26	100
5. Frequent temper loss	69	13	18	100
6. Biting, sucking or chewing clothing, etc.	68	16	16	100
7. Chewing or sucking lips, etc.	67	16	18	100
8. Tics	62	10	28	100
9. Picking sores	62	9	29	100
10. Picking nose	57	14	28	100
11. Grinding teeth	56	9	34	100
12. Nightmares	54	17	30	100
13. Fears and worries, 7 or more	54	5	41	100
14. Restlessness	53	24	22	100
15. Overactivity	52	35	13	100
16. Amount of food intake †	46	19	35	100

* The comparison here is between mother and observer, since the child was not asked whether or not he bit his nails.
† "Yes" designates a greater amount of food intake; "no" designates a lesser amount.

mothers who required help of physicians for their children or for themselves. The demographic characteristics of the correlation sample were also different: there was a much higher representation of people from the lower socioeconomic levels, and the children were slightly older. All of these facts make it undesirable to extrapolate directly from the correlation to the pilot study. Our aim in this part of the work was to look at the agreement between mothers and children on the presence or absence of the selected behavior items. As may be seen in Table 8, the highest agreement is 84 per cent for bed wetting, and there is a rapid decrement to levels of low correlation such as 46 per cent for amount of food intake. Again, as in the reliability study, the items showing the highest agreement are, for the most part, the more objective ones: bed wetting, thumb or finger sucking, stuttering, and so on. The more subjective behaviors, such as nightmares, fears and worries, and amount of food eaten, occupy the position of least agreement between the mother and child.

A breakdown of the percentages of disagreement between the two respondents is also shown in Table 8. It may be seen that by comparison with mothers children yield a significantly higher percentage of positive responses for stuttering, tics, picking sores, picking nose, grinding teeth, nightmares, fears and worries, and amount of food eaten. Mothers report a significantly greater amount of overactivity and bed wetting. With the exception of the last two items, it is noteworthy that most disagreements are due to an excess of children's positive responses over mothers'. It may be useful to speculate on possible reasons for these differences.

Overactivity is one of the most frequent behavior items found in the present analysis, having been reported by half the mothers in the original interviews. Lacking a specific definition of overactivity, the mothers had to judge its absence or presence by their own criteria. Since the perpetual motion of children is often a source of annoyance to mothers, their large number of positive responses is perhaps a reflection of the nuisance aspect of the behavior. On the other hand, children, unless they have been made unduly aware of the undesirability of bodily activity, do not regard themselves as overactive and are less likely to report this behavior. This difference in viewpoint is very likely the principal reason for the excess of positive responses by the mother.

Although the correlation study suggests that children tend to under-report bed wetting in comparison with mothers, the actual agreement between mothers and children on the presence of this behavior is higher than on any other item. In accounting for children's tendency to under-report this practice, one might assume that adverse social and emotional pressures exerted on children who wet the bed create in them a reluctance to confess it.

The behaviors which children report more often than mothers seem to fall into two distinct groups, the more objective or more easily observable and the more subjective or poorly-defined. The more objective behaviors reported more frequently by the child are tics, stuttering, picking sores, picking nose, and grinding teeth. It is quite possible that many children did not understand what was meant by the questions relating to tics and stuttering and therefore reported adventitious movements such as restless motions or speech difficulties of a different character. Excess affirmative answers by children on other "objective" items: picking sores, picking nose, and grinding teeth might be partly accounted for by the fact that these occurred in mild form and the child, in an effort to be honest, reported occasional practices of which the mother was unaware.

Some outstanding differences between the reporting of the mother and the child occur in those areas where subjective or poorly-defined behavior is involved. It is clear from Table 8 that the largest discrepancy is seen in fears and worries. It appears that 40 per cent of the mothers underestimate these concerns in their children and that very likely the mother is a poor source of information regarding this area of the child's experience. This is also true, but less so, of nightmares where the child does not necessarily confide each occurrence to his mother. As to food intake, the definition of normal amounts is a matter of viewpoint depending on cultural and family practices and on the degree of anxiety with which the whole subject is invested. Most of the disagreements on food intake are, as might be expected, a consequence of the mothers reporting a lesser amount eaten than do the children.

A comparison of mothers' reports on nail biting with the findings on direct observation of the child by the interviewer is made in Table 8. In 26 per cent of the children minimal evidence of nail biting, unreported by the mother, was found by the observer. Such a discrepancy may stem from two principal causes: one that the behavior is so minimal or so occasional that the mother is not cognizant of it and, two, that observers may err in interpreting what they see.

Discussion

Since it is the main purpose of this study to explore ways and means of obtaining valid and reliable information about the behavior of children, a discussion of this report will serve its most useful function in pointing out and analyzing possible sources of error and in considering methods for their eradication.

1. Mothers, as shown both in the reliability and correlation studies, tend to agree more closely with themselves and with their children on behavior which is objective and clearly defined. Thus subjective or poorly defined entities are likely to be under- or overenumerated by the mothers in comparison with children's reports or with themselves on reinterview.

2. The child is more likely to report subjective behavior than the mother but, on the other hand, may exaggerate the occurrence of casual or minimal behavior, or may fail to admit behavior such as bed wetting of which he is ashamed.

3. The "expert" observer or examiner is at the mercy of his opportunities for and powers of observation and his value judgment. He may find evidence of nail biting which is not present, or he may altogether fail to observe restlessness, overactivity, stuttering, or thumb sucking in a child who is either enough at ease with a friendly interviewer or sufficiently aware of social exigencies that he does not engage in such behavior during the interview.

4. Interviewer bias may be a source of inaccuracy. To the small extent that this has been studied it has not been found to be a factor, but further studies are needed, particularly with regard to the correlation between responses of mothers and children.

5. The formulation of the questions asked the mother and child is a likely source of error. Despite every attempt to set questions up as clearly and objectively as possible, it would be incautious to assume that every question was interpreted the same way by every person interviewed.

From our experience with the study to the present time, we have determined the need for further substudies on validation and method. Although the evidence suggests that well-defined objective behavior is somewhat more accurately reported by the mother, efforts must be made to define such behavior even more

precisely for still greater validity of reporting. The subjective and less well-defined behavior poses the greater problem and the question of how to define and how to obtain information about it is not easily answered.

Along with the analysis of the remaining data available from the pilot study, validation studies on small representative samples around each area analyzed will have to be developed. The factor of interviewer bias in the pilot work will have to be studied more thoroughly and the interview schedule will have to be revised to attain more precision and clarity of definition. Once these enterprises have been completed it will be possible to apply the more refined methods developed in the course of the preliminary work to the major task of studying a larger sample of children in which the subgroups classified according to age, sex, race, and socioeconomic level will be adequately represented. For that study it is planned to utilize a school population since it is more readily available than children from the community. Interviews with the mother will be continued, interviews with the child will be conducted, and suitable personality tests will be given. Adjunctive information will be sought from the school authorities and any other agencies or persons deemed useful. Children in one of the lower grades will be studied and, as they move from grade to grade, the same children will be restudied in later years. In this way, not only cross-sectional data will become available, but also longitudinal data on essentially the same group of children.

Summary

This preliminary study of behavior characteristics in a representative sample of 482 children as reported by mothers was designed as a testing device for a larger project. It has, within the limitations described, presented two significant findings. The first is that for a representative sample of children, mothers report a high percentage of behavior commonly thought of as pathological. The second is that mothers' reports in comparison with children's tend to err in the direction of underenumeration suggesting that the prevalence of the reported behavior may be even higher than the data disclose. This raises for serious consideration the question whether these characteristics are truly indicative of psychiatric disorder or whether they occur as transient developmental phenomena in essentially normal children. We hope that our further studies will contribute some clarification of this important issue.

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This is a description of mortality and morbidity in infants and preschool children in Minneapolis. After presenting the findings, the authors discuss how such data can be used for program planning and for further studies.

HEALTH PROBLEMS OF INFANTS AND PRESCHOOL CHILDREN:
REPORT OF A STUDY

Helen M. Wallace, M.D., M.P.H., F.A.P.H.A.; Evelyn Hartman, M.D., M.S.; Vernon Weckwerth, M.S.; and Eunice Davis, M.D.

WHILE THERE have been considerable data reported on the frequency and types of health problems seen in school-aged children, very little information has been published on infants and preschool children. Although it is true that there has been much material on mortality in infants and preschool children, there has been much less emphasis on morbidity. It is surprising that this is so, especially since well child conferences have existed for such a long period of time. And it is reasonable that both mortality and morbidity be studied in any analysis of health problems, in order to secure as complete a picture of health problems as possible.

This paper will attempt to provide answers to the following questions:

1. What are the most frequent types of health problems encountered in infants and preschool children attending Well Child Conferences?
2. What is the pattern of attendance at a community Well Child Conference?
3. How can such information be useful in planning community health services for infants and preschool children?

Method of Study

A. For the Mortality Phase

The death certificates of resident infants and preschool children in Minneapolis who died during the period from 1952 through 1956 were analyzed.

B. For the Morbidity Phase

1. All infants and preschool children seen in the Well Child Conferences of the Minneapolis Health Department during the months of April, 1957 (Group I), and by one physician (E.D.) during June and July, 1957 (Group II), were included in the study.
2. During these three months, the Well Child Conferences were conducted in accordance with the usual procedures. The physicians staffing each conference during the three months were requested to fill out a very brief study form on each infant and preschool child seen. During the three months studied, a history and physical examination were performed on each infant and preschool child included in the study.
3. The data so collected were tabulated and analyzed.

Background Information on the Minneapolis Well Child Conferences

The Minneapolis Health Department operates nine Well Child Conference stations, with approximately 440 physician sessions a year, and sees approximately 3,000 infants and preschool children a year. The infants admitted to the conferences represent nine per cent of all resident live births in Minneapolis. The children are seen on an appointment basis, with approximately 14 children seen per physician session. In

general, mothers are requested to bring their infants and preschool children to the Well Child Conferences according to a recommended schedule of once every six weeks during the first seven months; two visits between seven and twelve months; once every four months during the second year; semiannually from two to three years; and once a year during the fourth and, beginning September, 1956, fifth year. The staff of each conference session consists of one physician, two public health nurses, and one or two volunteers. Of the 10 part-time physicians employed at the time of the study, two (20 per cent) are certified by the American Board of Pediatrics; seven (70 per cent) are residents in the pediatric service of the University of Minnesota Hospitals. There is a means test determining eligibility of attendance at the Well Child Conferences. The content of service consists of the determination of health status; immunization against diphtheria, pertussis, tetanus, smallpox, and poliomyelitis; counseling of parents on the usual phases of growth and development, both physical and emotional; advice on feeding and nutrition; accident prevention; Mantoux testing at four years of age.

The Study Findings

Mortality

For the five-year period 1952 through 1956, the resident infant mortality rate in Minneapolis was 22.2; one-fifth of the infant deaths occurred during the postneonatal period. The major causes of postneonatal mortality were congenital malformations, pneumonia and influenza, and accidents. The major causes of mortality in preschool children were accidents, congenital malformations, pneumonia and influenza, and cancer and leukemia. The over-all mortality rates for male and female preschool children are approximately the same. It is of interest that while the mortality rates attributed to congenital malformations are significantly higher in female children, the rates attributed to all other causes (accidents, pneumonia and influenza, cancer and leukemias, and miscellaneous causes) are higher in male children.

Morbidity

During the month of April, 1957, 583 children were seen in the Well Child Conferences (Group I); during the months of June and July, 1957, 376 children were seen (Group II).

Frequency of Health Problems

Thirty-seven per cent of the children seen had an identified health problem. This percentage held true for both Group I and Group II. Age groups "12 months or less" and "25–36 months" had the lowest percentage. The age group with the highest percentage of identified health problems was "49–60 months" (Table 1).

Analysis by racial group reveals a higher percentage (40.5 per cent) of the nonwhite group with an identified health problem than the white group (35.8 per cent). It is of interest that in the white group the frequency of identified health problems remains fairly constant up to 49 months, after which it increases.

Analysis by sex reveals a higher percentage (41.5 per cent of the males with an identified health problem than the female group (31.9 per cent). Males had the lowest frequency of health problems at 25–36 months and females at 12 months or less.

Type of Health Problem

Table 2 shows the types of health problems identified in Group I (during a spring month) and Group II (during two summer months). The health problems most commonly identified in both groups of children consist of skin, respiratory disease, cardiovascular dis-

Table 1—Age Distribution of Children with Identified Health Problems

Age	Group I			Group II			Total		
		With H.P.			With H.P.			With H.P.	
	Total No.	No.	Per cent	Total No.	No.	Per cent	Total No.	No.	Per cent
Months									
12 or less	268	91	33.9	178	66	37.1	466	157	35.2
13–24	152	62	40.9	107	36	33.6	259	98	37.4
25–36	105	37	35.2	60	21	35.0	165	58	35.2
37–48	40	15	37.5	20	8	40.0	60	23	38.3
49–60	18	8	44.4	11	8	72.3	29	16	55.2
Total	583	213	36.5	376	139	36.9	959	352	36.7

ease, orthopedic, allergy, genitourinary, and nutrition. Next in frequency are eye, ear, and gastrointestinal. The low frequency of dental problems probably reflects a lack of interest on the part of the physicians, and not a true picture. The low frequency of emotional problems is evident to an even greater extent.

Some seasonal variation exists, as would be expected. Those conditions identified with a higher frequency in the spring months include respiratory, orthopedic, allergy, and ear. Those conditions identified with a higher frequency in the summer months include genitourinary, cardiovascular, and gastrointestinal (Table 2).

As previously stated, males had a higher frequency of identified health problems than females. Those systems in which the males had a higher frequency were orthopedic, respiratory, genitourinary, cardiovascular, eye, and ear.

The most frequent individual health problems include acute respiratory infection (5.9 per cent of children); diaper rash (3.0 per cent); cardiac murmurs

Table 2—Distribution of Health Problems by System

Type	Group I		Group II		Total	
	No.	Rate per 100 Children	No.	Rate per 100 Children	No.	Rate per 100 Children
Skin	66	11.3	42	11.2	108	11.3
Respiratory	61	10.5	15	4.0	76	7.9
Cardiovascular	15	2.6	23	6.1	38	4.0
Orthopedic	25	4.3	8	2.0	33	3.4
Allergy	21	3.6	10	2.7	31	3.2
Genitourinary	16	2.7	15	4.0	31	3.2
Nutrition	17	2.9	13	3.5	30	3.1
Eye	10	1.7	9	2.4	19	2.0
Gastrointestinal	7	1.2	7	1.9	14	1.5
Ear	9	1.5	3	0.8	12	1.3
Teeth	3	0.5	6	1.6	9	0.9
Miscellaneous	14	2.4	13	3.5	27	2.8

N.B.—A child may be counted more than once—i.e., may appear in more than one category.

Table 3—Age Distribution of Children by Frequency of Health Problem

Age	Group I				Group II				Total			
	One H.P.		More Than One H.P.		One H.P.		More Than One H.P.		One H.P.		More Than One H.P.	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Months												
12 or less	73	27.2	18	6.7	55	30.9	11	6.2	128	28.7	29	6.5
13–24	48	31.6	14	9.2	31	28.9	5	4.7	79	30.5	19	7.3
25–36	28	26.7	9	8.5	18	30.0	3	5.0	46	28.0	12	7.3
37–48	11	27.5	4	10.0	7	35.0	2	10.0	18	30.0	6	10.0
49–60	6	33.3	2	11.1	5	45.4	2	18.2	11	37.9	4	13.8
Total	166	28.5	47	8.1	116	30.9	23	6.1	282	29.4	70	7.3

(2.7 per cent); umbilical hernia (2.4 per cent). Skin infections, and eczema (1.6 per cent each); enlarged tonsils and adenoids, and phimosis (1.4 per cent each); strabismus (1.3 per cent); underweight (1.1 per cent); and anemia (1.0 per cent). In 959 children, there were three identified with mental retardation, three with convulsive disorder, six with emotional problems, three with speech problems, and seven with club feet.

Of the 959 children, 282 (29.4 per cent) were found to have one health problem, 64 (6.7 per cent) were found to have two health problems, and six children (0.6 per cent) to have three health problems (Table 3). While males in general had more health problems than females, they particularly had more multiple health problems (9.8 per cent in the males compared with 4.8 per cent in the females). In the males, the frequency of multiple health problems increased with age.

Data of Accidents

The mother of each child seen was asked by the conference physician concerning the occurrence and type of accident since the last visit. Eight per cent of the children had such an accident, with the age group 13–24 months and 25–36 months having the greatest frequency. Children seen during the spring month (Group I) were reported to have a higher frequency than those seen during the summer months (Table 4). Analysis by race reveals a higher frequency in whites than nonwhites.

Table 4—Children with Reported Accidents by Age

Age	Group I			Group II			Total		
		With Accident			With Accident			With Accident	
	Total No.	No.	Per cent	Total No.	No.	Per cent	Total No.	No.	Per cent
Months									
12 or less	268	16	6.0	178	10	5.6	446	26	5.8
13–24	152	23	15.1	107	6	5.6	259	29	11.2
25–36	105	17	16.2	60	3	5.0	165	20	12.1
37–48	40	3	7.5	20	2	10.0	60	5	8.3
49–60	18	1	5.5	11	0	0.0	29	1	3.5
Total	583	60	10.3	376	21	5.6	959	81	8.4

Table 5—Individual Children With Reported Accidents

Type	Group I	Group II	Total Number	Total Per cent
Falls	46	12	58	69.0
Burns	5	4	9	10.7
Ingestion	4	..	4	4.8
Hit by person	2	1	3	3.6
Running into things	1	1	2	2.4
Caught in door	2	..	2	2.4
Traffic	1	..	1	1.2
Miscellaneous	2	3	5	5.9
Total	63	21	84	100.0

The frequency of accidents in males (11.1 per cent) was almost twice that in females (5.8 per cent). By far the largest single group of accidents reported was due to falls (69.0 per cent), with burns and ingestion next in frequency (10.7 per cent and 4.8 per cent, respectively) (Table 5).

Attendance at the Well Child Conference

Table 6 shows the age distribution of the children studied, and therefore provides data on the community's use of the Well Child Conferences. It shows for both Groups I and II that proportionately more preschoolers aged 13–24 months and 25–36 months are being seen than would be expected but that fewer infants and fewer preschool children aged 37–48 months and 49–60 months are being seen than would be expected. The drop-off during the last two preschool years (37–60 months) is one which is said to be fairly uniform in this country, and one which was anticipated in this study. However, the lower percentage during the first year of life was not anticipated. Analysis of the age distribution by race reveals only one more pertinent finding—an even more rapid drop-off during the late preschool period among the nonwhite groups.

Although it has been previously indicated that the children in age level 49–60 months and the nonwhite children have a higher frequency of identified health problems, nevertheless they receive proportionately less health supervision.

Analysis of the children who missed their last previous appointment to the Well Child Conference shows that a con-

Table 6—Age Distribution of Children Studied

Age	Group I Observed No.	Group I Observed Per cent	Group I Expected* Per cent	Group II Observed No.	Group II Observed Per cent	Group II Expected* Per cent	Total Observed No.	Total Observed Per cent	Total Expected* Per cent
Months									
12 or less	268	45.9	51.6	178	47.3	50.8	446	46.3	51.3
13–24	152	26.1	21.9	107	28.5	21.9	259	27.0	21.8
25–36	105	18.0	14.6	60	15.9	14.4	165	17.2	14.5
37–48	40	6.9	7.3	20	5.4	7.2	60	6.4	7.3
49–60	18	3.1	4.6	11	2.9	6.0	29	3.1	5.1
Total	583	100.0	100.0	376	100.0	100.0	959	100.0	100.0

* According to the recommended plan of the Minneapolis Health Department of every six weeks from one to seven months; twice from seven to 12 months; three times from one to two years; twice from two to three years; once at four years; and beginning in September, 1956, once at five years.

Table 7—Reason for Missing Last Conference Appointment

Reason	Group I	Group II	Total
Acute illness in child	68	12	80
Forgot	12	5	17
Illness in family	10	3	13
Moved	7	1	8
Weather	7	..	7
Lack of funds for transportation	3	..	3
Accident	1	..	1
Miscellaneous	10	3	13
No Reason given	10	2	12
Total	128 (22.0%)	26 (6.9%)	154

siderably higher percentage of children in the spring group missed their previous appointment (22.0 per cent) than in the summer group (6.9 per cent). No consistent age pattern was found. The reasons given for missing their last conference appointment are listed in Table 7. Acute illness in the child accounted for over half of the missed conference appointments, followed by forgetfulness and family illness.

Discussion

These facts may be briefly summarized as follows: (1) Thirty-seven per cent of the presumably well children were found to have at least one health problem; (2) children having a higher frequency of health problems include those in the age level 49–60 months, the nonwhites, and the males; (3) while the pattern is not entirely constant, children in infancy and the early preschool period seem to have a lower frequency of health problems; (4) twenty-nine per cent of the children were found to have one health problem, 6.7 per cent had two health problems, and 0.6 per cent had three health problems; (5) the most common problems identified include skin and respiratory diseases, with cardiovascular, orthopedic, genitourinary, allergy and nutrition appearing next in frequency, followed by eye, gastrointestinal, and ear conditions; (6) the most frequent individual health problems were respiratory infection, diaper rash and other skin conditions, and umbilical hernia; (7) eight per cent of the children were reported to have had an accident since the last visit; (8) there was a lower attendance of infants and of children aged 37–48 and 49–60 months than expected; the drop-off was greater in the nonwhite; (9) sixteen per cent of the children had missed their previous conference appointment, the most frequent cause of which was acute illness.

The frequency and types of health problems identified suggest that some further questions be raised concerning the functions of a Well Child Conference. Some of the usually accepted functions include such activities as "promotion of health, prevention of disease, keeping the well child well, identification and referral of children with health problems." Almost 40 per cent of the infants and children in this series were found to have at least one health problem. Many of the health problems identified represent those which any physician reasonably well trained in the care of children should be able to handle, such as skin, respiratory disease, allergy, nutrition and gastrointestinal conditions. Since some of these conditions are already being treated in Well Child Conferences, the question then might be raised as to whether the Well Child Conferences of the future would include as a definite policy the treatment of all such conditions. Advantages of such a plan include the integration of well child supervision and treatment during illness, as occurs in a practicing physician's office; elimination of delay in treatment; the need for fewer visits on the part of the mother and child. A word of cau-

tion should be introduced, however; if some of the treatment phase is integrated into the Well Child Conference, it should be carefully planned on a community basis. Unless there is careful planning, there is the danger of the Well Child Conference changing from primarily care of well children to the care of sick children only. The point we are making, however, is that perhaps the Well Child Conference might as a definite policy include the care of some illnesses in those children receiving health supervision there.

For other common types of health problems identified in infants and preschool children, such as cardiovascular, orthopedic, genitourinary, eye and ear conditions, there is need within the community for diagnostic and treatment specialty services. Since this need exists for school children also, joint planning is indicated. Whether the diagnostic and treatment service is provided by the official crippled children's agency, a teaching hospital, the official health agency, or a voluntary agency, the group responsible for health supervision of children must accept some responsibility for stimulating the development of such services within the community.

Two per cent of the children were found to have an eye condition. It is likely that this represents a minimum frequency, because complete vision screening is not usually a part of the health appraisal. Because relatively simple screening measures exist, it is suggested that vision screening be included in the health appraisal of preschool children.

It is of considerable interest that emotional problems did not appear on the diagnostic list of health problems with any degree of frequency. There are several possible explanations for its low frequency—the physicians may be less sensitive to and able to identify emotional problems; or it may be due to the lack of definition of the conditions which should be included in the category of emotional problems in infants and preschool children. For example, when is sibling rivalry to be considered abnormal? Regardless, however, of the problem of definition, it is likely that this group of physicians, as would be true of most, would benefit from more intensive preservice and inservice training in the field of mental health.

The data on attendance are of some interest, and at least provide leads for further studies. We now know that there are proportionately fewer infants in attendance than would be expected, and that there is a drop-off after 36 months. Is the lower attendance of infants due to delay in registration, and, if so, is that related to the need for a more effective plan of referral by the voluntary community maternity hospitals? Or is there a waiting period for first registration causing the delay? Are the infants receiving health supervision from another source? At the other end of the age scale, questions which might be raised regarding the drop-off include: Is it due to the fact that parents may have a new younger child whom they bring to the Well Child Conference instead of the older preschooler? Is it due to the fact that parents are several years older than at the time of registration, the husband is earning more salary, and the family is financially ineligible because of the present means test? Is it due to the fact that the early preschool period seems to have fewer health problems, and that the parents may think that continuation of health supervision is not essential? Is it due to the fact that the older preschool child may have more multiple health problems and may be attending a pediatric clinic for sick children only? Or is it because immunizations, a tangible component of health supervision, are fairly well completed, and therefore the physicians and nurses have more difficulty in interpreting the importance of continuing health super-

vision? Or is it because parents know that additional immunizations will be provided upon entrance of children to public schools or in separate immunization clinics, and therefore attendance of the older preschool child at the Well Child Conference is not considered essential by parents for this reason? If the facts are known, then possibly steps can be taken to improve the attendance.

It is of interest that there is some similarity in the most frequent causes of death and of illness in postneonatal infants and preschool children, namely, congenital malformations, accidents, and respiratory infections. Questions which should be raised include the preventable aspects of these causes of mortality in these infants and children. Were the children who died receiving health supervision? When a health problem of an incipient potentially serious nature occurred, was medical care sought? Was medical care promptly and continuously provided? Further studies are needed to provide answers to these questions.

The Well Child Conference may be looked upon as only one source of data concerning the health status of infants and preschool children. Other sources include the practicing physician's office, the hospital outpatient and inpatient pediatric service, a house-to-house morbidity study involving all age groups, the official crippled children's agency, day nursery programs, children's institutions, and foster home programs.

Summary

This paper describes a study of mortality and morbidity in infants and preschool children in Minneapolis. The mortality data show that congenital malformations, accidents, pneumonia and influenza, and cancer and leukemia are the major causes of death in postneonatal infants and preschool children. The morbidity data show that 29.4 per cent of the infants and children were found to have one health problem, 6.7 per cent had two health problems, and 0.6 had three health problems, or an over-all of 36.7 per cent with health problems. Children having a higher frequency of health problems include those in the age level 49–60 months, the nonwhites, and the males. The most common health problems identified include skin and respiratory disease, with cardiovascular, orthopedic, genitourinary, allergy and nutrition appearing next in frequency. The most frequent individual health problems were respiratory infection, diaper rash and other skin conditions, and umbilical hernia. Eight per cent of the children were reported to have had an accident since the last visit; accidents were more frequent in males; falls were most frequent, followed by burns and ingestion. There was a lower attendance of infants and of preschool children over the age of 36 months; the late preschool drop-off was greater in the nonwhite. Sixteen per cent of the children had missed their previous conference appointment, the most frequent cause of which was acute illness. The paper also discusses the use of data derived from this study in program planning and in identifying leads for further studies.

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There is a need for more accurate, rapid and reliable means for diagnosis of tuberculosis. This paper describes the development and adaptation of the slide culture method for this purpose.

SLIDE CULTURE OF TUBERCLE BACILLI

IV: FURTHER DIAGNOSTIC TRIALS

Donald M. Simpson, M.Sc., and Roger W. Reed, M.D.

THE CONSTANTLY increasing number of publications concerning media and methods designed to provide more accurate, more rapid, and more reliable laboratory diagnosis of tuberculosis attests to the fact that at present no one method is entirely satisfactory. One of the problems has been to devise a procedure which would permit an earlier bacteriological diagnosis of the disease and which would be of greater assistance in clinical management during its course.

It has been pointed out by Cummings [1] that the ideal culture medium should support rapid growth of small numbers of tubercle bacilli, should permit easy differentiation by colonial morphology between pathogenic and nonpathogenic acid-fast bacilli, should inhibit growth of contaminants, and should be simply and reproducibly prepared from readily available ingredients. Most of the media used in the diagnostic isolation of tubercle bacilli today do not satisfy all of these requirements. They contain complex organic materials such as animal sera, egg yolk, or potato extract, none of which can be reproducible from one batch to another. During the past ten years, however, a number of media which meet most or all of the requirements of the ideal culture medium have been devised. The development of these media and methods has been reviewed recently by Reed and Morgante.[2]

One of these is the slide microculture method originally described by Koch [3] by which he was able to demonstrate growth of tubercle bacilli within a week. Adaptations of this method by Pryce [4] and Rosenberg [5] for diagnostic use were very sensitive, but too cumbersome for routine use. A notable advance in technic was reported by Lowry and Berry [6] with the development of special culture tubes and decontamination tubes which permitted simple and safe handling of sputum smears dried on ordinary slides. Reed [7] in 1953 reported a modification of the slide culture method which yielded excellent results, and subsequently Simpson and Reed [8] carried out fairly extensive trials of the modified technic in a routine diagnostic laboratory. It was found that slide culture appeared to be superior to conventional methods particularly in terms of the number of positive cultures produced and in the time required for them to become positive. These diagnostic trials have been carried on for the past three years.

It has always been accepted as precept that the use of a variety of media should produce an appreciable increase

in the number of positive cultures for tubercle bacilli in the diagnostic laboratory. There is no agreement as to which medium is the most satisfactory and various authors have suggested that Lowenstein-Jensen's medium,[1] Corper's potato medium,[9] and Petragnani's [10] are superior. Many large-scale comparisons of this sort have been made, but there is still considerable dissatisfaction [11] with the conventional types of media now used for routine isolation and identification of the tubercle bacillus. Because of the diversity of media used for the isolation of tubercle bacilli and the fact that no one medium is considered ideal, it seemed wise to compare the slide culture technic with a variety of both older and newer conventional media and with guinea-pig inoculation as well. It is the purpose of this paper to report results of a further long-term trial.

Materials and Methods

1. Media

(a) Kirchner's medium was prepared as follows:

Na_2HPO_4	3	grams
KH_2PO_4	4	"
$MgSO_4 7H_20$	0.6	"
Sodium citrate	2.5	"
Asparagin (Difco)	5.0	"
Glycerine A.R.	20	ml
Distilled water	1000	"

The final pH was adjusted to 7.2 and the medium dispensed in 20 ml amounts into the special culture tubes described by Lowry and Berry,[6] autoclaved for 20 minutes at 121° C and stored in the refrigerator. Fresh lots of pooled human serum received from the Public Health Laboratories were filtered immediately through a Seitz EK filter pad, checked for sterility and stored at 4° C. Immediately before use two ml of sterile serum (10 per cent) was added to each of the culture tubes required.

(b) Herrold's egg-yolk agar, Lowenstein-Jensen medium, Petragnani's medium, Tarshis blood agar,[13] and American Trudeau Society (ATS) medium were all prepared by standard methods.

2. Slide Culture Procedure

(a) All specimens were collected in sterile wide-mouthed, 4-oz screw-capped bottles. The average specimen was 25 ml and usually represented a 24-hour collection, although if sputum was scanty the collecting period was extended to 48 hours and rarely to 72 hours. The greatest number of specimens was received from outpatients reporting periodically for review.

(b) The container of sputum was shaken in a laboratory model paint conditioner until completely homogenized. The time varied with the specimen but usually was less than five minutes.

(c) Two thick smears were made from each specimen on standard microslides previously marked by a diamond pencil with the culture number. The smears were then dried on trays in a small bench model incubator for one hour at 37° C.

(d) Slides were then placed in the sterile decontamination apparatus shown in Figure 1. Only the two slides from a single specimen were placed in each decontamination tube. Each decontamination tube was filled with sufficient 6 per cent (V/V) sulphuric acid to completely cover the slides and allowed to stand for 7 minutes.* After draining the acid, pinch cocks were replaced and sterile distilled water was allowed to flow into all tubes simultaneously. The tubes were drained immediately by removing the pinch cocks and the flushing process was repeated twice more, thus insuring the complete removal of all traces of acid. All discarded acid and distilled water were drained into a 12-liter bottle which was autoclaved before discarding.

* We now use 1 per cent Zephiran for five minutes.

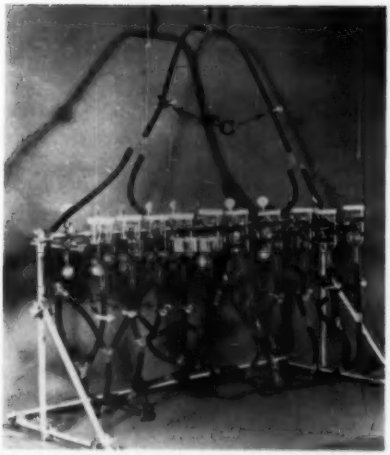

Figure 1—Decontamination Apparatus

(e) Each slide was then transferred aseptically to a labeled culture tube (Figure 2) containing Kirchner's medium plus serum. The slides were placed specimen side upwards to allow maximum aeration and the tubes then laid horizontally on the special racks shown in Figure 2. The amount of medium in the tube was sufficient to keep slides just immersed during the period of incubation. The racks were constructed with a half-elliptical bar lengthwise to prevent the tubes from rolling and with enough clearance that racks could be stacked in layers.

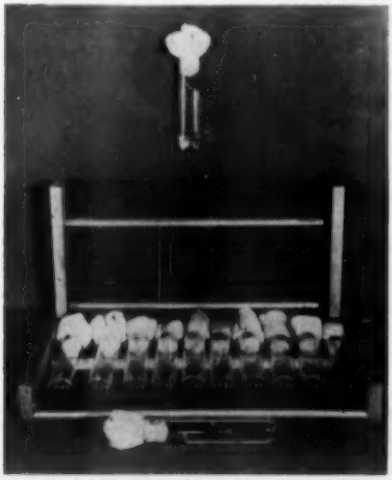

Figure 2—Slide Culture Tubes and Incubation Racks

(f) One slide from each specimen was removed after six days, the other after 14 day's incubation at 37°. Slides were dried and fixed at 90° C for 30 minutes on an electric staining bath, then stained according to the "cold" method of Aubert.[14] Staining was done using 0.3 per cent pararosaniline chloride with a few drops of Tween 80 and gave consistently uniform results. Decolorization was done with 5 per cent nitric acid followed by 95 per cent ethyl alcohol. A counter stain of 0.1 per cent aqueous brilliant green was used.

3. Conventional Culture Technic

After preparation of smears for slide culture the balance of the specimen was digested with an equal volume of 20 per cent trisodium phosphate for 20 hours at 37°, then neutralized with 10 per cent hydrochloric acid in the presence of bromthymol blue and transferred to sterile 50 ml centrifuge tubes. After centrifugation and removal of the supernatant, sediment was inoculated to tubes of Herrold's egg yolk agar and other standard media and well rubbed over the whole surface of the slope. At the same time smears were made for microscopic examination. Control cultures were examined weekly for the first appearance of growth.

4. Guinea-Pig Inoculation and Examination

Two guinea pigs were inoculated intramuscularly in the left thigh with the concentrated sediment from each specimen. They were kept under continual observation, and were weighed and sacrificed at the end of eight weeks. Careful examination was carried out at autopsy for evidence of tuberculosis.

Table 1—Comparison of Slide and Routine Cultures of All Sputum Specimens (7,010)

Concentrated Smear	Slide	Routine	Number	Per cent	Slide Total Per cent	Routine Total Per cent
482 Positive	+	+	329	68.1	90.1	72.8
	+	−	106	22.0		
	−	+	22	4.7		
	−	−	25	5.2		
6,528 Negative	+	+	80	1.2	2.2	2.5
	+	−	64	1.0		
	−	+	82	1.3		
	−	−	6,302	96.5		

Many cultures were taken for confirmation and in cases of doubt organs were referred to the pathologist for histological examination.

Experimental Results

1. Comparison of Slide Culture and Herrold's Agar

All specimens submitted to the laboratory at Camp Hill Hospital formed a part of this study and were cultivated both by slide culture and by the method commonly used in the laboratory for some years. A total of 7,010 specimens were cultured by the two methods during the period of study. Comparison of results obtained with these specimens is shown in Table 1. Four hundred and eighty-two gave a positive smear on examination of concentrated sediment and of this number 329 or 68.1 per cent were positive by both culture methods. An additional 106 or 22 per cent were positive by slide culture alone, whereas only 22 or 4.7 per cent were positive by routine culture alone. Combination of these figures gives a total of 435 or 90.1 per cent of the smear-positive specimens which showed a positive slide culture as opposed to 351 or 72.8 per cent which showed a positive routine culture.

Of the 482 specimens with positive smears, only 25 or 5.25 per cent failed to yield a positive culture by one method or the other. There were 6,528 specimens that were negative on smear of the concentrate and of these 80 or 1.2 per cent were positive by both culture methods; 64 were positive by slide culture only. Thus a total of 2.2 per cent smear-negative specimens were positive

Table 2—Comparison of Results of Positive Sputum Cultures

Culture Positive By	Smear Positive (457)		Smear Negative (226)		Total (683)	
	Number	Per cent	Number	Per cent	Number	Per cent
Slide and routine	329	72.0	80	35.4	409	60.0
Slide only	106	23.2	64	28.4	170	24.9
Routine only	22	4.8	82	36.2	104	15.1
Slide total	435	95.2	144	63.8	579	84.9
Routine total	351	76.8	162	71.6	513	75.1

by slide culture and 2.5 per cent by routine culture.

Table 2 presents a comparison of the results of all positive cultures, whether from smear-positive or smear-negative specimens. Three hundred and twenty-nine or 72 per cent of smear-positive specimens yielded a positive culture by both methods, an additional 106 or 23.2 per cent were positive by slide culture alone, while only 22 or 4.8 per cent were positive by routine culture alone. This gives a total of 435 or 95.2 per cent positive by slide culture and 351 or 76.8 per cent positive by routine culture, a difference of 18.4 per cent in favor of the slide method on smear-positive specimens.

The total number of smear-negative specimens which were positive by slide culture (144 or 63.8 per cent) was somewhat less than the total number positive by routine culture (162 or 71.6 per cent). When all positive culture results are considered it is seen that 84.9 per cent were positive by slide culture as compared with 75.1 per cent positive by routine culture—a difference of 9.8 per cent in favor of slide culture.

It has been pointed out in two previous papers that there is a marked difference in the time required for cultures to become positive by the two methods. Table 3 gives an analysis of the weekly cumulative percentage of positive cultures by each method. Of the total of 579 slide cultures 45 per cent were positive within six days and 100 per cent were positive in 14 days. No routine cultures were positive in 14 days, only 17.5 per cent after three weeks, and only at the end of eight weeks did the total number approach 100 per cent.

2. Comparison of Slide Culture, Guinea Pig, and Conventional Media

Specimens were selected as much as possible from cases with a history of sporadic positive cultures in order to show up possible differences in sensitivity of the methods used. It should be noted that on occasion in these studies only histological examination revealed the presence of a tuberculous process in the animal, that is, certain organs showed abnormalities but no gross anatomical evidence of the systemic spread of tuberculosis. In all such cases the evidence was carefully weighed before deciding whether or not to call the animal diseased.

A comparison of the results obtained with a total of 200 specimens is given in Table 4, with each of the seven isolation substrates shown separately. Of the 59 smear-positive specimens 53 or 90 per cent showed a positive slide culture. The number of specimens positive by one of the other culture methods varied from 32 or 54.3 per cent to a maximum of 40 or 67.7 per cent. It is apparent that none of the older or newer media compare with slide culture in sensitivity. Only 41 or 69.5 per cent of smear-positive specimens showed a positive guinea pig isolation. This figure is slightly higher than that for isolation on Herrold's agar but 20 per cent below the

Table 3—Comparison of Time Required to Become Positive

Culture technic and number of cultures	Incubation time, week											
	1	2	3	4	5	6	7	8	9	10	11	12
	Cumulative percentage positive											
Slide, 579	45	100										
Routine, 513	0	0	17.5	37.2	54.5	63.5	72.5	97.5	98	98	99	100

Table 4—Comparison of All Cultures and G.P. Inoculation (Each Method Shown Individually)

	Concentrated Smear			
	Positive 59		Negative 141	
	Number	Per cent	Number	Per cent
Slide	53	90.0	17	12.5
Herrold	40	67.7	17	12.5
Petragnani	35	59.5	11	7.8
Lowenstein	33	56.0	12	8.5
Tarshis	36	61.0	14	9.9
ATS	32	54.3	12	8.5
Guinea pig	41	69.5	17	12.5
Negative	5	8.5	112	79.5

number of isolations by slide culture. Only five specimens failed to yield a positive isolation by any of the seven methods.

One hundred and forty-one specimens were negative on microscopic examination of the concentrated sediment, and of these 17 or 12.5 per cent were positive both by slide culture and in the guinea pig. Only one of the other five methods yielded a comparable result, while 112 specimens or 79.5 per cent were negative by all seven methods. Results here on smear-negative specimens are similar to those reported in the previous section where no significant difference was observed in the number of positives by slide culture or by conventional means using Herrold's egg yolk agar.

Table 5 compares the results of all positive cultures and positive guinea pig inoculations. For purposes of this comparison all the solid tubed media are included under the single heading "conventional" media, that is, a positive

Table 5—Comparison of Results of Positive Cultures and G.P. Inoculation

	Smear Pos. (54)		Smear Neg. (29)		Total (83)	
Positive By	Number	Per cent	Number	Per cent	Number	Per cent
Slide, conventional, and G.P.	37	68.5	8	27.6	45	54.2
Slide and P.G. only	3	5.6	1	3.4	4	4.8
Slide and conventional only	8	14.8	6	20.7	14	16.9
G.P. and conventional only	1	1.9	3	10.4	4	4.8
Slide only	5	9.3	3	10.4	8	9.6
Conventional only	0	0.0	4	13.8	4	4.8
G.P. only	0	0.0	4	13.8	4	4.8
Slide total	53	98.2	18	62.1	71	85.5
Conventional total	46	85.2	21	72.5	67	80.7
G.P. total	41	76.0	16	55.2	57	68.6

Conventional media, i.e., positive on any one of the following media:
(1) Herrold's egg yolk agar,
(2) Petragnani medium,
(3) Lowenstein-Jensen medium,
(4) Tarshis blood medium,
(5) American Trudeau Society medium.

result was recorded if the specimen yielded a positive culture on any one of the ten tubes of solid media in use. In this table then, conventional methods are favored by ten tubes against two slide cultures or two guinea pigs. Of the total isolations 54 were positive on smear of the concentrated sediment and of this number 37 or 68.5 per cent were positive by all three methods (slide culture, conventional media, guinea pig). Three were positive by slide culture and guinea pig only, eight by slide and conventional media alone, and only one by guinea pig and conventional media alone. An additional five were positive by slide culture only and none by the conventional media or guinea pig only. Thus a total of 54 or 98.2 per cent were positive by slide culture, 46 or 85.2 per cent by conventional media, and 41 or 76 per cent by guinea pig.

In the smear-negative group of 29 positive cultures, eight or 27.6 per cent were positive by all three methods, one by slide and guinea pig only, six by slide and conventional only, and three by guinea pig and conventional only. An additional three were positive only by slide culture and four each only by conventional or only by guinea pig. There is then in this group a total of 18 (62.1 per cent) positive by slide culture, 21 (72.5 per cent) positive by conventional media, and 16 (55.2 per cent) positive by guinea pig. In this instance the number of positive cultures by slide culture is much lower than the number of positives by conventional media, a finding which we did not observe in the large-scale trial among smear-negative specimens. The number positive by guinea pig inoculation in this group is 10 per cent lower than slide culture and almost 20 per cent lower than conventional media.

Discussion

The results of this long-term trial of the slide culture method as a routine procedure have successfully shown once again that the method can be readily adapted for diagnostic use. The initial cost of equipment is not great. The technic is easy to learn and large numbers of specimens can be handled with relative ease. The medium more closely approaches the hypothetical ideal medium of Cummings [1] than any which we have so far seen described, particularly in ease of preparation and reproducibility. There are fewer hazards for the technician using the slide culture technic when carried out according to the procedures described above than for the technician using conventional methods of handling specimens.

One of the most important considerations from the clinical standpoint is the great reduction in the average time required for a positive culture. Berry and Lowry [15] and Reed [7] have shown that there is an average saving of at least three weeks in reporting positive cultures. This makes it possible for the physician to correlate all the available laboratory and clinical data at a much earlier date and therefore permits a much more satisfactory assessment of the patient's progress.

Pierce and Hirsch [16] have shown too that using the slide culture method it is possible not only to obtain a positive culture very quickly but in open cases under treatment to obtain the sensitivity of the organism to various tuberculostatic agents within five days, thus enabling a change in specific therapy to be made at the first sign of developing resistance of the organism. They have found that such a procedure has a marked and beneficial effect on the patient's whole course. Reed [17] and others have also used the method with considerable success for testing drug sensitivity of tubercle bacilli.

The results reported in both trials corroborate the authors' earlier findings.[8] Slide culture shows a marked superiority over conventional media in

successful isolation of tubercle bacilli from smear-positive specimens whether one or five such media are used, and is also superior to guinea pig inoculation. In fact, the grouped conventional media (Table 5) are also superior to animal inoculation on such specimens. However, grouped conventional methods were superior to both animals and slide culture in isolations from smear-negative specimens, although taken individually Herrold's agar was as sensitive as guinea pig and slide culture. This discrepancy between smear-positive and smear-negative specimens can be attributed entirely to the very great difference in size of inoculum used in the two methods. In the slide culture the inoculum consists of a few loopfuls of unconcentrated, but homogenized sputum, while in the routine method the inoculum is derived from the sediment obtained by concentrating the specimen. This discrepancy between methods is particularly evident when the organisms are present in only minimum numbers, as in the case of the smear-negative group. Neither method is entirely free of some deleterious effect due to the decontaminating procedures, that is, exposure to trisodium phosphate in one and sulfuric acid in the other.

One disadvantage of the slide culture technic is that at the present time the only reasonably reliable criterion for differentiating virulent tubercle bacilli from acid-fast saprophytes or avirulent strains is the appearance of cording. In most instances only virulent strains will show characteristic corded colonies while saprophytes and avirulent strains will show random arrangement of the cells. While the presence of cording in the microcolony as seen on slide culture varies considerably, its degree and pattern give a very good indication of virulence. Middlebrook [18] has stated that although all cord formers are not necessarily virulent, all virulent strains are cord formers. Our studies have shown that the arrangement of cells within the cord is of considerable significance.[19]

Recently another criterion has been added in the form of various in vitro dye virulence tests, the commonest of which is the neutral red test of Dubos and Middlebrook.[25] This test has been successfully used with tubercle bacilli grown on conventional solid media and on membrane filters and has proved to be quite reliable as an indication of virulence when considered in conjunction with morphological characteristics. The test has also been adapted for use with the slide culture technic as will be described in a later paper.[19]

Wilson-Miles [21] state "The great drawback to the cultural method is that it provides no proof that the acid-fast bacilli which have been cultivated are really tubercle bacilli or are derived from the material under examination. Though numerous methods have been suggested for distinguishing between tubercle bacilli and saprophytic acid-fast bacilli the truth remains that in primary diagnosis no organism should be reported other than provisionally as a tubercle bacillus until it has been finally identified by animal inoculation." It is questionable whether this statement, although its emphasis is on primary diagnosis, should be accepted dogmatically in all cases. It must be conceded under certain circumstances whether with respect to slide culture or conventional culture that the acid-fast organisms under study cannot be other than tubercle bacilli.

In Table 5 it will be noted that there are reported instances where specimens were positive by slide culture alone, five among smear-positive and three among smear-negative specimens. Case histories and bacteriological histories of the patients concerned were carefully studied in order to assess the validity of these cultures in the light of their failure to produce positive results on solid media

or in the guinea pig. These patients were all classified as far advanced bilateral tuberculosis with cavitation and two subsequently died. Two months prior to the appearance of the cultures in question, specimens from these patients were positive on one or other of the solid media and in the guinea pig. Subsequent cultures also gave rise to positive results by all three methods. Two of the cases of slide culture alone being positive were from one patient, although on widely separated dates. It seems inconceivable that patients with such a diagnosis could alternately produce virulent tubercle bacilli and saprophytes. It is highly improbable on careful examination of the evidence that these slide cultures are anything but tubercle bacilli, particularly when the typical parallel arrangement of the cells in characteristic corded colonies is considered.

Summary

The present work demonstrates beyond question the successful adaptation of what was originally an experimental technic to the demands of a routine diagnostic laboratory. Experience of four years with the technic has served to support our original idea that it would represent a major advance in the role played by the diagnostic laboratory in the diagnosis and clinical management of tuberculosis. Although further refinements and modifications of the technic are in progress we feel that in its present form the slide culture technic is superior to any culture method which has so far been developed. The emphasis during the present work has been on the diagnostic use of the method but the basic method lends itself admirably to studies with pure cultures of the tubercle bacillus in the field of metabolism and nutrition, and the effect of tuberculostatic substances.

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Prevention of rheumatic fever and consequently of rheumatic heart disease depends on the control of streptococcal infections. For control, accurate diagnosis is necessary. This paper presents a simple and efficient technic to achieve this aim.

DELAYED RECOVERY OF STREPTOCOCCI FROM THROAT SWABS

Nell F. Hollinger, Ph.D., F.A.P.H.A., and Lois H. Lindberg, M.P.H.

THE CONTROL of streptococcal infections currently is viewed as the key to the prevention of rheumatic fever and rheumatic heart disease.[1] Accurate recognition of such infections may be considered to afford one of the best approaches to control, since appropriate therapy will eliminate beta hemolytic streptococci from the throat and unnecessary therapy is to be avoided. In cases where accurate recognition is difficult or impossible without throat cultures, the laboratory findings become essential diagnostic evidence.[2] This essential evidence often is lacking because it is impossible or inconvenient to initiate present culture procedures, which are strictly dependent upon the immediate availability of media and a closely delimited time sequence if hemolytic streptococci are to be recovered with certainty. The findings reported in this paper were obtained in an attempt to develop a more practical procedure for delayed recovery of beta hemolytic streptococci. It is evident that progress in this specific phase of a major public health problem,[3] the prevention of heart disease, is dependent upon the development of a laboratory tool so acceptable that laboratory findings will be available to identify the nature of early or subclinical streptococcal infections and carrier states or those which are difficult to recognize. A satisfactory transport medium would facilitate the expansion of essential epidemiological studies on the incidence of beta hemolytic streptococci [4] so that populations of low density could be included with less difficulty and at lower cost.

Prior to the development of dacron throat swabs and filter paper strips, throat swabs for culture of Group A streptococci were best plated at once (zero hour) onto blood agar (which then necessitated incubation at 37°C without excessive delay) or tubed in holding or enrichment media.[5] Investigators developing enrichment media [6, 7] have postulated that streptococcal death intervened before recovery because of overgrowth by other microorganisms or from metabolic end products. On the hypothesis that death ensued following dehydration or oxidation, solid,[7-11] semi-solid [12, 13] or liquid [14] holding media have been recommended. Because media developed on the basis of these assumptions have not been accepted universally [15] a more fruitful approach to the problem of transport and recovery was sought in the literature. Evidence was found that Group A streptococci remain viable on dry bedding for several months [16, 17] and are recoverable as pure

cultures months after lyophilization [18] and after drying on filter paper.[19] Jettmar's [20] results are an indication that failure to recover streptococci from nasopharyngeal swabbings occurs because the streptococci are not left on the agar when the blood plate is streaked with a dried cotton swab. Pure cultures of beta hemolytic streptococci, placed on cotton pledgets and exposed to direct sunlight in warm to hot dry, windy weather for a few days or stored in the dark for approximately a year, were recoverable on blood agar if Jettmar minced or pulverized the pledgets and scattered the resulting dust on the agar. Cellulose fibers and serum dipped, sterilized, swabs were found more satisfactory than cotton with respect to survival and recovery of pathogenic streptococci.[10]

Pure Culture Studies

It appears that under specified conditions beta hemolytic streptococci survive when dry; in many cases inability to recover these organisms may be attributed to failure to remove the cocci from the fibers of the swab; it follows that swabs should be relatively nonabsorbent and should be desiccated in transit. To test these premises, subcultures from stock strains of alpha, beta, and gamma streptococci * were semiquantitatively introduced onto cotton swabs † and placed in screw cap test tubes. After designated storage intervals, selected to simulate delay in postal transit, these swabs were streaked onto 10 per cent defibrinated sheep blood agar (DSBA),‡ then immersed in trypticase soy broth (TSB). After more than 24 hours' storage, recovery was observed only in TSB. Later a similar, semiquantitative technic was employed to introduce subcultures of each of the three streptococcal strains onto swabs empirically judged to be less absorbent than cotton. In this way handmade dacron ** and alginate § swabs, as well as glass covered cotton swabs and dry glass plates, were inoculated and stored. The beta hemolytic streptococci were recovered on blood agar after two to three days. Subsequently a desiccant, silica gel, was added to the screw cap storage tube to assure more rapid drying of the material on the swab. Subcultures from the CDC stock streptococci were plated from dacron swabs which had been desiccated for specified storage intervals. Recovery was satisfactory.[21] Quantitative recovery of suspensions of pure cultures of Group A streptococci, placed on filter paper ¶ [22] and held two to four days before culturing on DSBA, was demonstrated successfully by another microbiologist.[§§]

Pilot Study

Clinical material, to test the transport and recovery procedure as developed here, was sought at an outpatient pediatric service in hospital X and in outpatient ear, nose, and throat services in hospital Y. The oropharynx of each child was swabbed twice, each time by rotating two previously sterilized and desiccated dacron swabs over or into the recommended areas.[23] One of the four swabs was immediately (zero hour)

* These stock strains supplied to T. M. Hawkins, associate in public health, SPH, Berkeley, by courtesy of Dr. Ralph B. Hogan, Communicable Disease Center (CDC), Atlanta, Ga., through the Division of Laboratories, California State Department of Public Health (CSDPH).

† American Hospital Supply Corporation, Evanston, Ill.

‡ Bacto No. B-44 + 0.1 per cent Bacto No. B-127 (Yeast Extract), Difco Laboratories, Inc., Detroit, Mich.

** Dupont Batting; Pacific-Maid Products, Pacific Felt Co., Inc.

§ Polymannuronic acid derived from seaweed by Medical Alginates Ltd., Wadsworth Road, Perivale, Middlesex, Great Britain, originally furnished by Dr. Sanford S. Elberg, chairman, Department of Bacteriology, and Dr. Edwin S. Crosby, SPH, UC, Berkeley.

¶ No. 201, Reeve Angel and Co. Inc., New York, N. Y.

§§ Harvey De Boer, M.P.H. candidate, SPH, UC, Berkeley, Calif.

dilution streaked onto DSB agar and then held for ten days in a screw cap glass tube containing confined silica gel.* Without streaking, the other three swabs were tubed and held similarly. At 48, 96, and 144 hours, one held, dried swab was removed and recovery streaked onto blood agar, the zero hour swab being streaked for a second time after 240 hours. Immediately after each swab was plated dry, it was dipped into TSB and was streaked again onto blood agar, this time as a moist swab; but moist swabs were no more effective.

Each streaked plate was incubated at 37°C for 18 to 24 hours, then read. Isolates were selected by subsequently reading the plates and picking beta hemolytic colonies in order to obtain "positives," i.e., pure cultures of beta hemolytic streptococci. Each pure culture selected as "positive" was then mailed to the CDC † where grouping and typing was done under the supervision of Dr. Elaine Updyke. From a total of 143 throat cultures 41 or 29 per cent were sent as "positive" and all 41 pure cultures were confirmed as beta hemolytic streptococci. The holding and recovery data were in conformity with the original premise that a less absorptive swab fiber (dacron), desiccated (by silica gel) during transit or storage, would permit direct recovery of the bacteria of interest on solid media for six to ten days after oropharyngeal swabbing. Eight isolates were recovered only after delayed plating and were not detected on immediate control plates. In part, the investigators attribute this apparent superiority in delayed recovery to a reduction in overgrowth from bacterial strains which did not tolerate drying.[24, 25]

* Number C-3404, Central Scientific Co., Chicago, Ill.

† By the CSDPH, Berkeley 4, Calif., by courtesy of Dr. Howard L. Bodily, chief, Division of Laboratories.

Methods, Field Trials

Employing a technic analogous to that described in the Pilot Study, 1,603 paired cultures were obtained from closed population groups at each of five hospitals, one private office, and one county health department.‡ In the hospital pediatric ward and outpatient pediatric clinics U, W, X and Y and in the adult clinic, 757 paired swabbings were obtained by passing two dacron swabs, in sequence, over the oropharynx of each patient. The first swab, designated as the "held" swab, was immediately placed into a screw cap test tube containing confined silica gel and stored two to ten days before it was recovery streaked onto DSBA. The second swab, designated zero hour or "immediate control," was dilution streaked onto DSBA at once. In pediatric clinic V and in the private office paired swabs were obtained by simultaneously rotating each of two dacron swabs over the oropharynx of each patient. Using this single swabbing technic, 305 paired cultures were obtained by dilution streaking one swab at once for the immediate control culture and desiccating the held swab two to ten days before recovery streaking for the delayed culture.

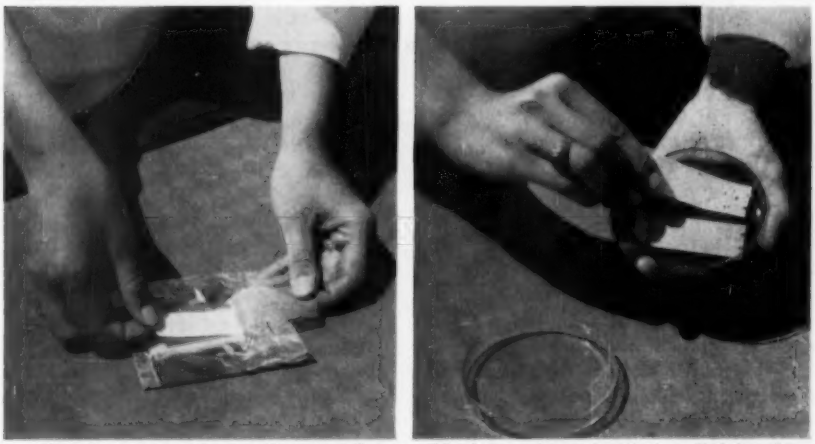
Studies involving the services of the county health department included a serum [26] throat swab control from each patient as well as a dacron throat swab for inoculating a strip of filter paper which was in a kit. Essentially, this filter paper kit consists of a filter paper strip placed between two glassine protector strips. These three strips are stapled to a double thickness of heavy aluminum foil and, prior to sterilization by auto-

‡ Appreciation is expressed for the complete cooperation of the administrators, physicians, microbiologists, nurses, and staff members at each clinic and office. Without the full support of the laboratory director, microbiologists and physicians in continuing health department studies similar to those published earlier by the health officer,[26] data could not have been collected by the reporting investigators.

claving, the sides and ends of the foil are folded over the glassine strips to form a closed, triple cover protecting the filter paper strip. In this department all the throat swabbings were obtained using the sequence swabbing technic. The dacron swab, used for the initial swabbing, was immediately heavily streaked back and forth over the surface of a filter paper strip and placed in a glassine bag without a desiccant.

After a filter paper kit had been held two to ten days following inoculation, the strip was cultured by pulling it free from the staple and placing it face down on the surface of a DSBA plate (Figure 1). Two strips were cultured on each plate. Each strip was allowed to absorb moisture from the blood agar before the plate was inverted and incubated at 37°C for six hours. This plate was referred to as the Primary Plate. After six hours at 37°C, the Primary Plate was removed from the incubator and the paper strip removed to another DSBA plate. This second plate was referred to as the Replica Plate. The Primary and Replica Plates were then placed in the 37° C incubator for 18 hours and read for the number of colonies of beta hemolytic streptococci. After 24 hours, isolated colonies of beta hemolytic streptococci as well as other bacteria were evident on the Primary Plates while typically only a spreading type growth of other bacteria or complete to confluent lysis due

Figure 1—Method of Culturing Filter Paper Strips Employed for Transport of Pharyngeal Material



Two filter paper strips may be cultured on one blood agar plate. A strip is pulled free from stapled end of filter paper kit and placed face down on agar surface. After each strip has thoroughly absorbed moisture the plate is inverted and incubated at 37° C.

The second swabbing was accomplished by using a serum impregnated cotton swab which was placed in a screw cap test tube. All specimens were properly identified and within six to 24 hours were delivered to the county health department laboratory by messenger. The county microbiologist recovery streaked the dry dacron swab onto one-half a DSBA plate and dilution streaked its paired serum control swab on the other half. All plates were read after 18 to 24 hours incubation at 37°C. The filter paper kits were mailed to Berkeley.

to beta hemolytic streptococci were evident on the Replica Plates. While reading approximately 1,100 cultures, complete lysis due to Staphylococcus sp. was not observed on Replica Plates. All plates were read by observing and recording the number of zones of complete lysis or confluent lysis. All plates read as "positive for beta hemolytic streptococci" were confirmed by picking colonies for pure culture studies with subsequent grouping and typing by CDC.

Results and Discussion

Findings are summarized according to the clinic or office to which the 1,603 patients reported (Table 1). Positives * are listed by colony count, then totaled; negatives are given by totals only. The beta hemolytic colony count for each paired culture is given in the first column, i.e., the count is given for the immediate control swab plated at once and is in the same row as the count for the paired transport medium plated after a delay of two to ten days. The greatest number of patients found to yield beta hemolytic streptococci had high paired cultured counts (category 25+, row one); 113 had counts of 25+ for both the immediate and the delayed dacron swab and 94 had counts of 25+ for both the immediate swab and for the delayed filter paper strip.

There were more colonies on the immediate than on the paired, delayed culture for 39 patients. In 40 cases there was failure to recover streptococci from the held swab when the control count was high (25+) and there was no recovery from the held swab in 42 cases paired with controls showing only a few colonies. About 75 per cent of the latter 42 failures to recover beta hemolytic streptococci were in clinic X, 1957. In this same clinic, colony counts of 25+ dropped to few or zero in almost half of the 79 cases for 1957 in which recovery from dacron failed or in which only a few colonies were observed after delayed plating. The explanation offered is that recovery streaking was not effective in 1957 because of incorrect technic; in 1956, with adequate recovery streaking, the record for held dacron swabs was better than that for 1957. However, in 43 cases, the held swab gave a positive culture and the immediate control was negative. It is probable that some control plates were read as negative because immediate (zero hour) streaking was confluent or the swabs were too moist and colony growth confluent. Failure of recovery from controls also was less frequent when swabbings on children were made by those adept in pediatrics.

For filter paper strips the record is qualitatively similar. Recovery from held strips was reduced in 18 cases and failed in 11 for which there was a beta hemolytic colony count of 25+ from the immediate control swab. The filter paper gave a high colony county (25+) on delayed culture in 42 cases for which there was no recovery from the paired swab cultured at once; in an additional 23 cases the filter paper gave a yield of a few colonies and the paired control swab gave no beta streptococci on immediate culture. The fact that these 65 filter paper strips are recorded as positive, whereas their paired controls are negative, is attributed to a decrease in other flora; the overgrowth seen on some controls plated from swabs is not observed in delayed plating of paper strips.

The results on recovery of beta hemolytic streptococci from paired cultures are summarized in Table 2 without regard to high and low colony count. From the patients in the paired immediate and held swab study (top of Table 2) there were 324 confirmed positive cul-

* All positives were confirmed as beta hemolytic streptococci by the CDC except that the report on one culture only has not been received to date.

Table 1—Efficiency of Dacron Throat Swabs and Filter Paper Strips in the Transport and Recovery of Beta Hemolytic Streptococci from Pharyngeal Material

Number of Colonies		Number of Patients																
		Dacron Throat Swabs											Filter Paper Strips					
		Pediatrics Clinic											Pediatrics Clinic					
When Plating Is								Private	Adult	Hosp.	County	Total						
Immediate Control	Delayed Held	U 1957	V 1957	W 1956	X 1956	X 1957	Y 1956	Office 1957	Clinic 1957	Ward 1957	H.D. 1957	All Sources	U 1957	V 1957	X 1957	Adult Clinic 1957	County H.D. 1957	Total All Sources
25+	25+	2	19	1	10	38	4	11	1	0	27	113	2	15	41	1	35	94
25+	few	2	4	3	6	16	1	1	0	1	5	39	2	9	5	0	2	18
25+	0	0	9	0	2	19	0	4	0	3	3	40	0	8	2	0	1	11
few	25+	0	2	0	1	9	1	0	0	2	3	18	2	2	17	0	9	30
few	few	2	3	3	3	6	3	0	0	1	8	29	1	0	10	0	0	11
few	0	2	3	2	1	29	1	0	0	1	3	42	1	5	4	0	4	14
0	25+	2	2	0	0	2	1	2	0	3	7	19	2	3	11	1	25	42
0	few	1	6	1	5	4	2	1	0	0	4	24	1	4	6	0	12	23
Total Positive		11	48	10	28	123	13	19	1	11	60	324	11	46	96	2	88	243
Total Negative		55	129	24	42	229	55	109	83	72	481	1,279	55	129	132	82	457	855
Total Patients		66	177	34	70	352	68	128	84	83	541	1,603	66	175	228	84	545	1,098
Per cent Positive		16.7	27.1	29.4	40.0	35.0	19.1	14.8	1.2	13.2	11.1		16.7	26.3	42.0	2.4	16.1	

Pediatrics Clinic U: Armed Services Hospital, Outpatient Dependents Clinic
V: Insurance Group Hospital, Insurance and Full Pay Drop in Outpatient Clinic
W: County Hospital, Nonpay Orthopedic and Eye Outpatient Clinics
X: County Hospital, Nonpay General Outpatient Clinic
Y: Private Hospital, Full-, Part- or Nonpay Outpatient Clinics

Private Office: Pediatrics
Adult Clinic: Private Hospital, Full-, Part- or Nonpay Gynecology Outpatient Clinic
Hosp. Ward: County Hospital, Nonpay Pediatrics
County H.D.: County Health Department, General Service

Table 2—Dacron Throat Swabs and Filter Paper Strips in the Transport and Recovery of Beta Hemolytic Streptococci from Pharyngeal Material

Recovery of Beta Hemolytic Streptococci	No. of Patients	
Held * Dacron Swab Positive Immediate Control Positive Swab	199	
Held Dacron Swab Positive Immediate Control Negative Swab	43	
Held Dacron Swab Negative Immediate Control Positive Swab	82	
Total Positive	324	
Dacron Swab Positive/100 Positive		74.5
Control Positive/100 Positive		86.8
Held Filter Paper Strip Positive Immediate Control Positive Swab	153	
Held Filter Paper Strip Positive Immediate Control Negative Swab	65	
Held Filter Paper Strip Negative Immediate Control Positive Swab	25	
Total Positive	243	
Filter Paper Strip Positive/100 Positive		89.5
Control Positive/100 Positive		73.5

* Held 2 to 10 days before plating as a routine. In rare instances the Dacron Swabs were held 1 to 17 days; the Filter Paper Strips 2 to 42 days.

tures, 199 from both swabs, 43 from the held dacron swabs only, and 82 from only the control swab upon immediate plating. The fact that 75 per cent of the recoveries were from held swabs and 87 per cent from immediate controls may be interpreted as a failure of transport medium or, as previously mentioned, as due to incorrect technic in obtaining pharyngeal material or in recovery streaking.

In the study of transport of pharyngeal material on filter paper strips the same table (2) shows recovery of beta hemolytic streptococci from a total of 243 patients. In 153 cases recovery was made both from the filter paper held two to ten days before plating and from a swab immediately plated as a control; in 65 cases recovery was from the held filter paper only; in 25 cases only the control swab gave a positive culture. The 90 per cent recovery after transport on filter paper may be considered higher than the 74 per cent recovery after immediate plating of pharyngeal material from a throat swab; or the 16 per cent numerical difference may be attributed to incorrect dilution streaking technic on controls or to variability in multiple throat cultures.[27, 28]

The fact that, in the two transport studies, the lowest recovery rate is about three out of four may suggest that identical rates between pairs should not be anticipated and that in studies of this nature, considerable variability in multiple throat cultures will exist regardless of control measures. Variability in recovery cannot be explained on the basis of the group or type of beta hemolytic streptococcus recovered. Of the 357 * different positive cultures tabulated in Tables 1 and 2, 80 per cent were Group A and the rest Group B (2.5 per cent), C (7 per cent), G (9 per cent) or K (1 per cent). Of the total, 15 per cent were Group A, type 12, 2.6 per cent were type 1, and 54 per cent were reported Group A, nontypable. Other Group A types were infrequent, Group A, type 3, 4, 6, 8, 11, 13 (28R), 22, 28R and 33 were identified but no one type constituted more than 2 per cent of the total.

Summary

The simplicity and efficiency of dacron swabs and filter paper strips, in the trans-

* Positives isolated from the same patient are listed in the Tables 1 and 2 according to recovery from control or transport media. When only one control was employed for both transport media only one isolate was identified.

port of pharyngeal material for recovery of beta hemolytic streptococci, are sufficient to warrant trial of either transport medium in epidemiological studies on the streptococci. A reference laboratory study on delayed recovery is proposed as feasible at this time.

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British Guiana had its first epidemic of poliomyelitis in 1957. This outbreak was studied by means of a "portable" virus laboratory, and the results obtained are presented in this report.

THE USE OF A PORTABLE TISSUE CULTURE LABORATORY IN A FIELD STUDY OF TROPICAL POLIOMYELITIS

Joseph L. Melnick, Ph.D., F.A.P.H.A.

FIELD INVESTIGATIONS of poliomyelitis usually consist of an on the spot survey of the local situation, often coupled with the collection of specimens to be brought back to the base laboratory. There they may be tested immediately, but all too often they are kept in the deep freeze until an opportune moment arrives for them to receive the attention of a busy laboratory. Months may pass before the clinicians and public health officials at the epidemic site learn the outcome of the tests.

In order to overcome this lag phase, an attempt was made to bring a "virus laboratory" into the field in the study of an outbreak of tropical poliomyelitis, the first in the area, which occurred in the early part of 1957 in British Guiana. We came equipped with 600 tissue cultures, with type-specific sera for identifying any strains which might be isolated, with complement-fixing (CF) antigens, and with light, disposable plastic trays in which to set up the CF tests.

During one week's stay in British Guiana late in March of 1957, 14 viruses were isolated, and it was established: (1) that type I poliovirus was the responsible agent for the outbreak, although type II virus was also active; (2) that other enteric viruses (ECHO or Coxsackie) were infecting some of the patients diagnosed as having "poliomyelitis"; and (3) that type I poliovirus was prevalent but to a lesser degree among control children of the same age as those afflicted with clinical poliomyelitis.

Serological tests in the field were limited to the performance of complement fixation tests using types I, II, and III poliovirus antigens. A number of positive, and a significant number of negative, tests were obtained. They proved helpful in diagnosis, as when one of the two adult cases could be ruled out because of negative tests. Sera were collected from 200 control persons for purposes of establishing the prevalence of poliomyelitis antibodies in the area. However, these tests were carried out upon our return to New Haven.

Background of the Epidemic

British Guiana lies on the north east of South America, between Venezuela, Brazil, and Surinam, between latitudes 1° and 9° North and longitudes 56° and 60° West. Approximately 85 per cent of the country is forested, 11 per cent is savanna, and the remainder along the seaboard of 270 miles is of flat alluvial clays.

Except for native Amerindians and the few isolated mining establishments in the interior, the population is almost limited to the coastal plain. Much of this area is below the level of high tides and is protected from flooding by an extensive system of canals and trenches which discharge into the sea at low tide.

Infant Mortality—Areas having a high degree of sanitation, and a corresponding low rate of infant mortality, report a high incidence of poliomyelitis, and vice versa. The infant mortality in British Guiana was fairly constant between 1870 and 1920, about 200 per 1,000 births. It then began a steady decline, reaching 101 in 1945. Annual rates for the ten consecutive years since 1945 were 87, 87, 78, 77, 86, 77, 82, 79, 74, 70.

Experience in other areas [1] has indicated that poliomyelitis outbreaks occur when the infant mortality rate falls below 80, and are particularly severe when the rate falls below 40. The steady fall in infant mortality, especially in the last few years, suggests that the way of life had changed sufficiently so that an increase in poliomyelitis might have been anticipated.

History of Poliomyelitis—Cases of poliomyelitis had been reported in British Guiana but the rate had been markedly low. One case was reported in 1950, in a child one year of age. In 1951, four cases were reported in persons aged 15, 21, 23, and 29 years (in view of the nature of the disease—fatal ascending paralysis—these cases were probably bat rabies). Between 1952 and 1956, there were from one to six cases reported annually, almost all in young children. In 1957, there were 69 recognized cases, chiefly in children under five years of age.

The 1957 Epidemic

Although cases of the initial poliomyelitis outbreak began to be reported in February of 1957, in retrospect the first cases had their onset in November, 1956. This is shown in Table 1.

Table 1—The Course of the Epidemic

Date	Cases by Week of Onset	Cases by Week of Report
Nov. 1956	1	0
Dec. 1956	2	0
Jan. 1–7, 1957	1	0
Jan. 8–14	1	0
Jan. 15–21	1	0
Jan. 22–28	2	0
Jan. 29–Feb. 4	4	0
Feb. 5–11	6	2
Feb. 12–18	6	7
Feb. 19–25	11	5
Feb. 26–Mar. 4	10	19
Mar. 5–11	9	9
Mar. 12–18	11	10
Mar. 19–25	4	10

Age Incidence—As shown in Table 2, British Guiana experienced true infantile paralysis, with most cases under the age of five years. Comparative data with similar early outbreaks in other areas are shown in Table 3. It is apparent that although the age distribution of cases is similar to initial outbreaks in other areas, British Guiana was spared in so far as the attack rate was concerned. The over-all attack rate was only 14 per 100,000, as against attack

Table 2—Distribution of Cases by Age with Age-Specific Attack Rates (British Guiana, 1957)

Age	No. of Cases	Age-Specific Rates per 100,000
0 to 6/12	0	0
7/12 to 11/12	4	41
1	19	107
2	17	98
3	9	54
4	5	32
5–9	12	18
10–19	0	0
20+	2	<1

Table 3—Comparison of Age-Specific Attack Rates in Poliomyelitis Outbreaks (Rates per 100,000)

Age	British Guiana 1957	Jamaica 1954	Israel 1950	Mauritius 1945	New York City 1916
0– 4	61	194	932	1,070	1,340
5– 9	18	38	111	540	320
10–14	0	30	41	40	50
15–19	0	33	22	20	20
20+	1	23	11	30	4
All ages	14	50	150	240	180

rates of 50 to 240 in other areas which experienced the transition from endemic to epidemic poliomyelitis.

Clinical Disease—The cases admitted to the Government Hospital were mild, even though most had muscle weakness and some degree of paralysis at the time of admission. Almost all patients improved markedly. There were no bulbar cases, no cases of respiratory paralysis, and no deaths. The extent of involvement was so mild in some patients that questions were raised as to the correct diagnosis of these cases.

Geographic Incidence—The data for different districts along the coastal plain are shown in Table 4. They indicate that no large area was spared. The first three cases with onsets in November and December, 1956, occurred along the east coast, the fourth case was from Georgetown, in the center, and the next two again from the east coast, but thereafter cases were scattered along the entire coast. In East Bank Demerara, a suburb of Georgetown with newer and better houses, the rate was three times that of Georgetown.

Incidence for Ethnic Groups—The data are listed in Table 5. No difference was observed among the major population groups. However, among the Europeans, seven cases occurred in a population of 12,200; this is a rate of 57 per 100,000, which is significantly higher than that of the East Indians and Africans. This is associated with a standard of life among the Europeans which is generally much higher than that of the average East Indians and Africans who make up most of the population.

Table 4—Incidence of Poliomyelitis in Various Areas of British Guiana

Areas	Cases	Population	Rates per 100,000
Courantyne	5	82,000	6.1
New Amsterdam	2	13,500	14.8
East Coast Demerara	21	106,400	19.7
Georgetown	10	93,900	10.6
East Bank Demerara	9	28,400	31.7
Demerara River	1	14,000	7.1
West Coast Demerara	7	33,800	10.7
West Bank Demerara	8	22,600	31.0
Essequibo Coast	5	22,700	22.0

Table 5—Incidence of Poliomyelitis in Ethnic Groups

Group	No. of Cases	Population	Incidence per 100,000
East Indian	34	230,900	14.7
African	22	171,900	12.8
Mixed	6	55,400	10.8
Portuguese	4	8,100	49.0
Other Europeans	3	4,100	73.0
Chinese	0	3,300	0
Amerindian	0	19,400	0

Laboratory Studies

Virus Isolation and Typing—For this study, two lots of monkey kidney cultures were used.* One lot of 300 cultures were seeded eight days before leaving New Haven for British Guiana and the second lot of similar number were seeded one day before. They accompanied the author in the cabin of the plane, and in this way fully grown cultures were available from the first lot for use on arrival in British Guiana, and new cultures from the second lot became available as the week progressed.

On the morning after arrival, rectal swabs were taken on 34 patients in the poliomyelitis ward, and at the bedside they were immediately transferred to tissue cultures, using four cultures per specimen. This procedure was possible because of the presence of antibiotics (penicillin, streptomycin, tetracycline, and mycostatin) in the culture medium.

In some instances, six cultures were used; two contained type I antiserum, two contained type II, and two contained type III. In this way a virus could be isolated and typed at the same time. For example, if four culture tubes containing types II and III antisera were destroyed, but the two cultures containing type I antisera were protected, then the isolated virus was type I poliovirus.

Cytopathic responses typical of poliovirus became evident in some of the inoculated specimens within 48 hours. Typing was also carried out or confirmed by passage in the presence of poliomyelitis antisera and the virus was identified by the serum which neutralized it.

Certain viruses behaved like Coxsackie or ECHO viruses in that they were not neutralized by poliomyelitis antisera, or they had long incubation periods with limited progression of cytopathogenicity.

In addition to testing the rectal swabs of the poliomyelitis patients, 28 similar specimens were collected from patients with a variety of other diseases on the pediatric ward on another floor of the hospital. The ages of the control children averaged about 18 months.

During the stay in British Guiana, 14 virus isolations were made; 12 from the poliomyelitis patients and two from the control group. Of the 12 viruses from the poliomyelitis patients, seven were identified as type I, two as type II poliovirus. Three others failed to be neutralized by any of the polio antisera and presumably belong to other enterovirus groups.

There was no significant difference in the clinical features of patients who yielded type I or type II polioviruses, or other enteric viruses. It must be emphasized that finding a virus in the enteric tract does not by itself justify the conclusion that it has produced the current illness, for these agents appear in the normal juvenile population. A number of ECHO and Coxsackie viruses have been found to cause aseptic meningitis of a type indistinguishable from nonparalytic poliomyelitis, and in some instances even with the association of paresis.[2] Two type I polioviruses were isolated from the control specimens. It is of interest that one of these was asso-

* The details of the tissue culture procedures may be found in Melnick, J. L. "Tissue Culture Methods for the Cultivation of Poliomyelitis and other Viruses," in Diagnostic Procedures for Virus and Rickettsial Diseases (2nd ed.). New York: American Public Health Association, 1956.

Table 6—Identification of Isolated Viruses by CF Reaction and Correlation with Neutralization Tests

Virus Isolate	Conc. of Tissue Culture Fluid	Type I 1:30	Type I 1:60	Type II 1:30	Type II 1:60	Type III 1:30	Typing Serum Which Neutralized Virus
HH K_1	1:1	4	4	±	±	4	I
	1:2	4	4	0	0	0	
	1:4	±	0	0	0	0	
E K_2	1:1	4	4	±	0	0	I
	1:2	±	0	0	0	0	
	1:4	0	0	0	0	0	
U K_2	1:1	4	4	4	4	4	II
	1:2	0	0	4	4	0	
	1:4	0	0	0	0	0	
CV K_2	1:1	4	4	±	±	0	I
	1:2	±	±	0	0	0	
	1:4	0	0	0	0	0	
T K_2	1:1	4	4	0	0	0	I
	1:2	4	4	0	0	0	
	1:4	0	0	0	0	0	
CC K_1	1:1	Anticomplementary					II
J K_2	1:1	0	0	0	0	0	I
	1:2	0	0	0	0	0	
	1:4	0	0	0	0	0	

ciated with a fever of unknown origin, which might have been an expression of the virus infection. The other child had external otitis, and presumably was an inapparent carrier of poliovirus.

Typing of Viruses by CF Test—In addition to identifying the viruses by neutralization test, seven viruses were also typed in the field by using them as antigens in the CF test. The tests were set up in white plastic disposable trays, incubated overnight under a cover of aluminum foil. The light trays, which can easily be stacked, and the dropping pipettes, were brought from New Haven, as were standard antisera and antigens (which were brought packed on ice). Other than the substitution of the plastic trays (which contain 96 cups each) for the flat plexiglass plates, the detailed procedure has been described elsewhere.[8]

Of the seven viruses tested, five yielded satisfactory results (Table 6). One antigen was anticomplementary and one was too weak to react. Of the five, three contained only one antigenic component in agreement with the neutralization tests. Two viruses gave heterotypic crossings, one type I virus (HH K_1) crossing with type III, and one type II virus (U K_2) crossing with both types I and III sera, although the major antigenic component was in agreement with the results of the neutralization tests. Parenthetically, the question could be raised as to whether strains of such broad antigenicity might not be of value for incorporation into poliomyelitis vaccines.*

* Subsequent tests in New Haven showed that the U K_2 virus was an attenuated poliovirus strain. This was proved by lack of neurovirulence and by the 10,000-fold reduction in plaque counts when plated under low concentration of bicarbonate. Other strains produced paralysis in monkeys and had a high efficiency of plating at low bicarbonate con-

Table 7—Laboratory Results on Hospitalized Patients

Age (Years)	Day of Disease Serum Obtained	CF Antibody Titer			Neutralizing Antibody Titer			Day of Disease Swab Obtained	Virus Isolation
		I	II	III	I	II	III		
1	44	40	0	0	50	0	0	43	Polio type I
1	13	0	0	0	250	0	0	19	Enterovirus, other than poliovirus
1	62	>40	40	0	250+	50	0	61	none
2	8	10	20	0	50	0	0	8	Polio type I
2	33	10	0	0	250	0	0	7	Polio type I
2	1	0	0	0	100	0	0	2	none
2	6	10	tr	0	250+	0	50	14	Polio type I
3	46	>40	0	10	250+	0	250+	73	Polio type II
5	2	>20	>20	0	250+	250+	50	6	none
5	14	40	40	0	250+	250+	50	24	none
7	38	>40	>40	tr	250+	250+	50	39	none

Serological Tests—The field tests were carried out by the CF reaction. Ideally, this test should be carried out with matched serum specimens taken at onset and during the course of the illness. However, this is not always possible, especially under the conditions of the present study, where only single specimens of sera were available for most of the patients. Some of them gave negative CF responses, presumably because they were collected too soon after onset for antibodies to have developed. An appreciable number (20 of 38 tested) gave positive reactions, and at a much higher percentage than found among control (nonpoliomyelitic) children (two positive of 29 tested). Some patients whose late serum specimens gave negative CF tests probably represent cases other than those of poliomyelitis. We have discussed elsewhere [3] the significance of CF antibodies in poliomyelitis, particularly in single serum specimens.

Serum specimens were subsequently tested in New Haven for neutralizing antibodies. The results gave evidence of a common experience with type I virus, offering strong evidence that this was essentially an epidemic of this type.* Data on some representative patients are shown in Table 7. One patient deserves special comment. A serum specimen taken on day 46, the day of his admission to the hospital, was strongly indicative of type I infection (both by CF and neutralization tests). However, type II virus was isolated on day 73, when a rectal swab was taken. It is probable that this patient acquired his type II infection while in the hospital.

Bornholm Disease—During the period of the poliomyelitis outbreak, a number of patients with myalgia came to the attention of local physicians. Through the kindness of Dr. Frank Williams, sera from eight patients were obtained. Their ages were 7, 19, and 33–40 years. Only one of these, a 33-year-old patient, gave a strong positive test for type I and II antibodies, suggesting that the myalgia

centrations. The data on these strains are given in detail by Hsiung and Melnick elsewhere.[4]

* Subsequent to the tests contained in the body of this paper, 14 sera were received two months after the field trip. These were collected by Drs. B. B. G. Nehaul and F. Williams from suspected cases of poliomyelitis. Of these, five showed high CF antibodies, chiefly against type I. All of these sera contained neutralizing antibodies, mostly at a level of 1:50 or greater, against type I.

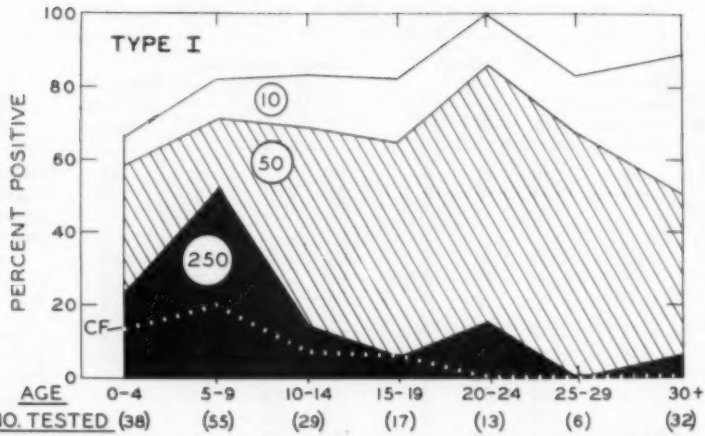

Figure 1—Age Distribution of Neutralizing and Complement-Fixing Antibodies Against Type I Poliovirus in Healthy Persons in British Guiana, 1957

250, solid black, indicates per cent of age group possessing neutralizing antibodies at serum dilution of 1:250 or greater

50, striped, indicates per cent of age group possessing neutralizing antibodies at 1:50 dilution

10, white, indicates per cent of age group possessing neutralizing antibodies at 1:10 dilution

Dotted line indicates per cent of age group possessing complement-fixing antibodies at serum dilutions of 1:5 or greater

in this instance might have been the result of infection with poliovirus; the others were negative. No tests for antibodies against the Coxsackie B viruses, known agents of epidemic myalgia (Bornholm disease), were conducted.

Serological Survey—The age distribution of cases indicated that, by and large, the population of British Guiana had been immunized by exposures to the polioviruses prior to 1957. To determine the extent to which this was so, a survey was initiated to learn the level of antibodies in different segments of the normal population. The sera were transported to New Haven on ice, and antibody tests were carried out there, using the panel test described in the Bulletin of the World Health Organization.[5]

The results for neutralizing antibodies against types I, II, and III are shown in Figures 1, 2, and 3. Very few persons above the age of four years were lacking in antibodies, at levels of 1:10 (top curve). For each type, higher levels of antibodies, 1:50 and 1:250 or more, were present in the younger age groups. Type III antibodies were somewhat lower than those of the other types (as was true among the patients also). The results confirm the impression obtained from the age-distribution of cases, that poliomyelitis infection is not new in British Guiana. Infections must occur early in life, as this is the period of highest antibody levels, indicators of recent infections.

Comparative serological data were obtained for control* and patient groups.

* An attempt was made to determine whether the patterns of antibody development varied in different parts of British Guiana, and for this reason specimens were collected from a number of different groups. There were no significantly different results in any of these areas, and therefore all of the control data have been pooled.

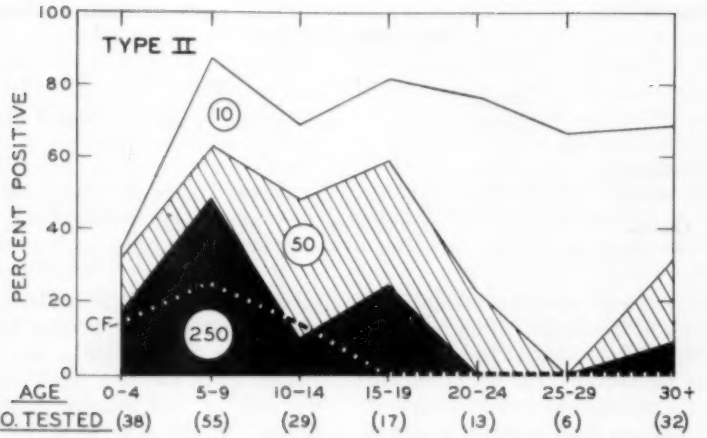

Figure 2—Age Distribution of Neutralizing and Complement-Fixing Antibodies Against Type II Poliovirus in Healthy Persons in British Guiana, 1957. Legend as in Figure 1

In the control group, those having CF antibodies against type I at a titer of 20 or higher constituted only 3 per cent of the one- to four-year old group, and 7 per cent of the five- to nine-year-olds; in the patients, the corresponding figures were 27 per cent and fifty per cent. This same general relationship held for type II CF antibodies, but the prevalence of antibodies against type III was low in both patient and control groups.

In regard to the neutralizing antibodies (Table 8), differences between controls and patients were again ob-

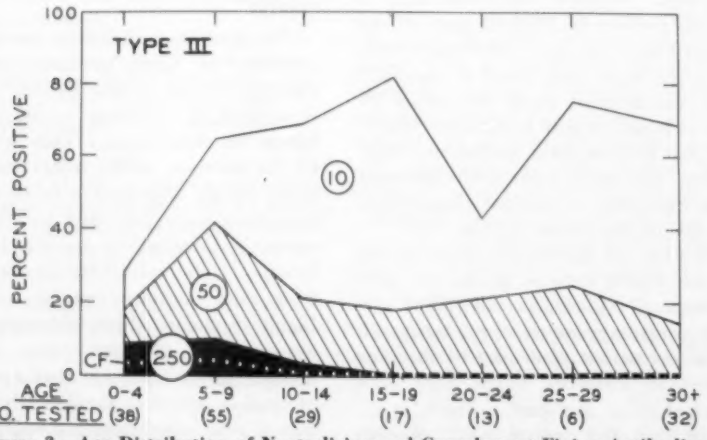

Figure 3—Age Distribution of Neutralizing and Complement-Fixing Antibodies Against Type III Poliovirus in Healthy Persons in British Guiana, 1957. Legend as in Figure 1

Table 8—Per cent of Controls and Patients Possessing Neutralizing Antibodies (Age Group 1–4 Years)

	No. in Group	Type I		Type II		Type III	
		≥250	≤10	≥250	≤10	≥250	≤10
Poliomyelitis patients	29	72	96	14	28	21	48
Controls	38	24	66	17	37	8	29

served, but were much less marked than those for CF antibodies. They indicated that type I infections had occurred among the controls, but not as recently as in the patients. As would be expected, more patients than controls possessed high titering neutralizing antibodies.

Discussion

The 1957 outbreak of poliomyelitis represents the first epidemic of the disease in British Guiana, but there are indications that poliomyelitis infections were common to the area. While cases prior to 1957 were few in number, the age distribution of cases in the initial outbreak indicates that the population above five years old had been well immunized. Antibody studies on sera of normal persons in different parts of the country bear this out. Antibodies were prevalent at all ages, being of especially high titer in those under the age of 10. This is in accord with recent data [6] showing that poliomyelitis neutralizing antibodies, once gained, are not maintained at a high level in normal populations, but fall in the course of time.

In view of the mild nature of the disease—there were no deaths nor were there any respiratory cases—and the high percentage of recovery, the possibility exists that epidemics of this low degree of virulence might have been overlooked in the past. There is no doubt that the present outbreak was true poliomyelitis, in view of the virus isolations and antibody responses in the patients. The fact that viruses of both types I and II were isolated militates against the concept that a new highly virulent virus had been introduced into the area or had mutated from local strains. On the other hand, one might also argue that the type II viruses were examples of the endemic type and that a new, virulent type I strain was the etiological agent of the epidemic. Nevertheless, it appears that the local polioviruses were producing mild illnesses, and that British Guiana is at a transitional stage as far as poliomyelitis is concerned. Comparison of rates of this outbreak with those of other first outbreaks showed that the outbreak was not only clinically mild, but that the rates were much lower than those in other "initial" epidemics.

One possible explanation for the occurrence of cases produced by the endemic strains is that British Guiana is undergoing a change in the way of life of its inhabitants. This is shown by the lowering of the infant mortality rates, by the increased activity toward improving sanitation, and by improvements in housing. Large numbers of families have moved in recent years from slum housing (ranges) to single family dwellings which, although small, are airy and are kept clean. It was brought to our attention that a number of cases occurred in families which had moved into new housing developments, but that it was only the youngest children, born in the new location, who

succumbed. Infection of these children seems to have been postponed for one or two years beyond the age when their older siblings had been infected. Indeed, it is likely that in tropical environments those living with poor sanitation become infected under the cover of maternal antibodies, for recent work has shown that the enteric phase of poliovirus infection takes place readily in the presence of artificially induced antibodies.[7, 8]

That the patients appear to be coming from those approaching "middle-class" status is also suggested by Dr. Frank Williams' observations of the poliomyelitic children. In his opinion these patients were in a better nutritional state than typical Guianese children of the lower socioeconomic groups. It would seem worth while to obtain quantitative data on this aspect, particularly in areas experiencing a first epidemic.

The question was raised repeatedly as to whether Salk vaccine should be used in the population once the epidemic had been recognized. The author's opinion was that it should not be used at this time in British Guiana for the following reasons:

1. No evidence was available that vaccinating at the time of an epidemic had altered the course of an outbreak.

2. Poliovirus was well seeded in the population by the time the epidemic was recognized, and vaccination would not be expected to be beneficial after such a thorough exposure of susceptibles. Support of this was obtained by isolation of two type I poliovirus strains from 28 "control" children.

3. The cost of such a program for British Guiana would have been high, and the funds could be used more advantageously for the alleviation of human disease if spent on other more serious problems.

On the other hand, if the standard of living in British Guiana continues to improve, poliomyelitis should continue in its emergence from an endemic to an epidemic disease—unless a program of vaccination is instituted. From the age incidence of the disease and from the age prevalence of antibodies in the normal population, it appears that vaccination need only be carried out in the young juvenile population. Once having started a vaccination program, serious consideration should be given to following selected groups of the population to insure that antibodies have been produced and that they are maintained. From the data obtained on viral infection and carriage in vaccinated children [7, 8] it would take a relatively short period before vaccinated infants in British Guiana boostered their immunity by having subclinical infections with poliovirus under the benefit of a cover of antibodies.

Summary

The first epidemic of poliomyelitis in British Guiana occurred in 1957. A study of this outbreak has shown that such epidemics in tropical areas can be investigated by means of a "portable virus laboratory." The use of tissue cultures which can be handled under field conditions allowed viruses to be isolated and typed within a few days. This was of value in establishing two types of poliovirus as etiologic agents, and in suggesting that some of the reported cases might be the result of infection with enteroviruses other than poliovirus. With portable plastic panels and dropping pipettes, complement fixation tests were set up for performing antibody determinations overnight on diagnosed and suspected cases of the disease. The virologic and serologic tests were of immediate value to local public health officials in establishing poliovirus infection, or of offering no confirmation of the diagnosis of poliomyelitis.

ACKNOWLEDGMENTS—This study was carried out by Dr. Melnick and a technical assistant from New Haven. The study would not have been possible without the cooperation and assistance of many people in British Guiana, especially Drs. B. B. G. Nehaul, F. Williams, B. Singh, T. R. Jones, and Messrs. M. A. Hussain, E. A. Singh, J. M. Drepaul, and G. M. Khan.

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Papers Invited for 1959 Nuclear Congress in April

The American Public Health Association is one of several technical organizations sponsoring the Nuclear Engineering and Science Conference, to be held in the Cleveland Municipal Auditorium, April 5–10, 1959. The theme of the Congress will be, "For Mankind's Progress." This will be the fifth Nuclear Congress, the third with APHA sponsorship. The purpose of the conference is to foster a free exchange of knowledge, information, and ideas, among the various organizations interested in any aspect of nuclear energy without too great a demand on staff time for attending conferences.

Among the rules for participating sponsors is that the organizations shall sponsor or co-sponsor at least one technical paper in the nuclear field. Members are urged to indicate as early as possible their interest in presenting such a paper, giving the subject, an outline, and approximate probable length. This should be sent to the Association offices, 1790 Broadway, New York 19, for recommendation to the Conference Committee which will make final selection.

The general rules of the conference require that the paper has not been previously presented, meets the technical standards of the sponsoring society, is subject to review by a conference committee, and is submitted in full text and in abstract form in accordance with the schedule established by the conference.

Does immunization against polio with a killed virus create an immune barrier to virus spread? A study of household infections (1953–1957) produced data which indicate that in persons without natural immunity vaccination did not affect alimentary infection.

THE INFLUENCE OF NATURAL AND ARTIFICIALLY INDUCED IMMUNITY ON ALIMENTARY INFECTIONS WITH POLIOVIRUSES

John P. Fox, M.D., M.P.H., F.A.P.H.A.; Henry M. Gelfand, M.D., M.P.H.; Dorothy R. LeBlanc, R.N., M.P.H.; and Dighton F. Rowan, Ph.D.

IT IS commonly recognized that immunity to an infecting agent may range in degree from absolute resistance to infection down to minimal modification of its morbid consequences. For the individual, distinction between absolute and relative resistance is not of importance provided that the infection permitted shall not result in disease. For the group, the distinction is of practical importance only if the immune but infected individual is capable of serving as a link in the chain of continued dissemination of the agent or if the maintenance of immunity in the individual, and hence, in the herd, depends upon natural restimulation by infection.

Our present interest is in immunity to poliomyelitis. From the characteristic age distribution of clinically evident infections, it appears that immunity initiated by natural infection during childhood ordinarily protects adults from disease. Serosurveys of isolated populations, such as those of certain Alaskan Eskimo communities,[1] afford proof that in many persons seroimmunity may persist indefinitely after infection. However, such studies leave unanswered questions as to the actual proportion of infections that are followed by long persisting immunity, whether or not reinfections are important at all to the maintenance of both individual and herd immunity, and, if reinfections occur, whether the reinfected individual can play a significant role in virus dissemination. Obviously, rather similar questions relate to immunity which is induced artificially. Major interest centers in the possibility that artificially induced immunity, resulting from either killed-virus vaccine or infection with live avirulent strains, may not only prevent disease but also either prevent or so modify alimentary infection that the immune individual can play no effective role in virus transmission. If such were the case, it is clear that extensive but partial immunization of the population might create a significant barrier to virus spread and so afford a measure of protection to those not vaccinated.

Some have suggested that the greatly reduced occurrence of paralytic poliomyelitis in the United States in 1957 is out of proportion to the extent of vaccine application and may indicate that a vaccine-induced immune barrier to virus spread actually has been erected. However, in this connection it should be noted that as recently as 1942 the na-

tional incidence of paralytic disease declined spontaneously so that in the first 39 weeks only 2,832 cases were reported as compared with 4,881 in the equivalent portion of 1957.* In this light, the 1957 decline is no more than the resultant of a naturally occurring depression plus the personal protection afforded those individuals who themselves were vaccinated.

The purpose of this paper is to present in some detail information derived from our own studies and to review other existing information which may help to answer the questions just raised.

Objectives and Methods in the Louisiana Study

Our own contributions stem from a study begun in 1953 which had as its original objective the achievement of more complete understanding of the process of natural immunization against poliomyelitis. During 1953, a total of 157 households, each with a newborn infant to serve as an index child, were recruited from population segments defined on the basis of area of residence, family size, race, and economic status. After collection of base line admission sera from all household members and of pertinent background information, the households were visited regularly every month to obtain interval information concerning the entire family and blood and stool specimens from the index infant. The specimens were examined on a current basis, using now standard tissue culture methods, to detect poliovirus in the feces and new appearance of antibody in the serum. Detection of infection in the index child was followed by an immediate special visit to the house for further specimens from all family members and any indicated extrahousehold contacts. Yearly, blood specimens were obtained from all household members to insure recognition of infection episodes escaped by the index child. This phase of the study terminated in January, 1956, when Salk vaccine was offered to all incompletely immune children of the study group. At this time, 136 households remained after an average observation period of 30 months.

Following a two-dose primary course of vaccine, 118 families agreed to remain under modified observation, the objective of which was to determine what effect vaccination might have on the occurrence and course of enteric poliovirus infections. Since then, stools have been collected twice monthly from all children in each family under age 15 but bleedings have been omitted except in relation to vaccination and episodes of infection. In January of 1957, the third or booster dose of vaccine was given and observations were continued as in 1956. While eight more families withdrew during 1956, seven new ones were added so that 1957 began with 117 households in the study. Detailed accounts of the field and laboratory methods and of the observations in 1953–1955 prior to vaccination have been published only recently [2, 3] and preliminary reports have been made of the information becoming available during 1956 [4] and the first four months of 1957.[5] Preliminary data are now available through August, 1957, and further progress has been made in analyzing previously obtained material.

Household Episodes of Infection by Year and Virus Type

From the inception of the study in 1953 through August, 1957, a total of 177 household episodes of infection with polioviruses have been detected. These are summarized by year and virus type in Table 1. In 11 instances, of which ten occurred prior to 1956 when only

* These figures are from the National Office of Vital Statistics and were cited in the CDC Poliomyelitis Surveillance Report No. 129 of October 4, 1957.

Table 1—Episodes of Household Infection in Southern Louisiana by Virus Type and Year Before Vaccination (1953–1955), After a Primary Course (1956) and After a Booster Dose (8 Months of 1957) of Salk Vaccine

Virus Type	Number[x] of Episodes in Year Indicated					
	1953 (6 mos.)	1954	1955	1956	1957 (8 mos.)	1953–1957
1	3	8	25(26)	28(29)	3	67(69)
2	1(2)	20(22)	15(17)	4	0	40(45)
3	5(6)	29(31)	8(9)	14	3	59(63)
All	9(11)	57(61)	48(52)	46(47)	6	166(177)

x—Numbers in parentheses include episodes revealed only retrospectively by examination of the annual sera.

the index child was under systematic observation, the episodes were revealed only retrospectively by examination of the sera collected annually from all household members. Such episodes cannot be dated more precisely than the year of occurrence and consequently are lacking in much desirable documentation as to attending circumstances. However, it is of interest that as a group they tended to be abortive in that they not only failed to involve the index children but also failed to involve one or more additional nonimmune members of the affected households. Relative distribution by virus type, as noted elsewhere,[2] varied from year to year in apparent relation to deficiencies in type-specific immunity among the younger children. Over-all, type 1 was most frequent (69 episodes) and type 2 least (45 episodes). Annual variation is of special current interest, the 47 episodes in 1956 actually representing a slightly greater relative frequency of episodes than in the years prior to vaccination. In 1956 we used this fact to support the idea that vaccination did not influence the frequency of infection episodes. The data for 1957, with only six episodes in an eight-month period, appear to reflect a truly reduced frequency although a final statement must await ultimate analysis of the 1957 status of the households with respect to infection-induced immunity. Great interest obviously pertains to determining what part, if any, vaccination may have played in this reduction.

Serologic Response to Salk Vaccine

Before considering the infection episodes in the periods before and after vaccination, it may be helpful to observe the effect of vaccine as measured by seroresponse. Interest naturally centers on the development of antibody of types not present prior to vaccination. The available data are shown in Table 2 for children triply negative and for those with one or two heterologous types of antibody before the primary course. All primary courses were from a single unselected lot of commercially prepared Salk vaccine whereas the booster doses were from a lot specially chosen by Dr. Murray of the Division of Biologic Standards for its high potency. The initial response of children with prior heterologous immunity was quite good to antigens of all three types and that to the booster was excellent with titers of types one and two antibody equalling or surpassing 1:160 in over 80 per cent of cases. However, in the case of the important group of triple-negative children, the results were much less satisfactory with many completely failing to respond to the primary course, especially to type 3 antigen. Administration of the booster dose revealed that, except in the

Table 2—Summary of Antibody Developing Solely in Response to Salk Vaccine One Month After the Primary Course and One Month After the Booster Dose[x]

Doses of Vaccine	Pre-Vaccination Immunity Status	Number of Persons	Per cent of Persons with Antibody to Virus Type Indicated in Titers of 1:x One Month After Primary or Booster															
			Type 1						Type 2						Type 3			
			0‡	2-5	10-20	40-80	160-320	640+	0‡	2-5	10-20	40-80	160-320	640+	0‡	2-5	10-20	40-80	160-320	640+
2	none	110	36	30	28	6	⟶△		26	21	41	12	⟶		60	23	13	5	⟶	
	only heterol.	97, 97, 94	10	22	41	27	⟶		8	14	39	38	⟶		18	32	35	15	⟶	
3	none	62	23	5	10	10	27	16	0	0	3	8	55	34	50	6	13	18	8	5
	only heterol.	50, 61, 53	0	0	8	4	36	52	0	0	5	15	49	31	4	6	17	25	32	17

x—Not shown in the table are data for rises in antibody of types present prior to vaccination. Further, the post-booster data are only for those children residing in households which escaped episodes of infection in the 11-month interval between the primary and booster doses.

‡—Titer of 0 includes both those negative when tested in 1:2 final dilution (the majority except in the postbooster group) and those negative in heel-blood specimens which could not be tested in final dilution below 1:10.

△—Sera collected after the primary course were not titrated beyond the 1:40 dilution.

case of the type 2 antigen, failure to respond detectably to the primary course was commonly associated with failure to condition the recipient to the booster inoculum. The final result was that antibody to types 1 and 3 viruses failed to develop in 23 and 50 per cent of the children, respectively.

Intrahousehold Spread of Infection

In Table 3 an effort has been made to indicate, with reference to age and to homologous immunity prior to the episode, the extent of infection among all members of the 124 households which experienced episodes of infection in the period 1953–1955 prior to vaccination. The figures presented now differ somewhat from those previously published [3] because of the inclusion of the index children as well as their household associates and also of persons involved in the episodes discovered only retrospectively. Because of this expansion, the

Table 3—Observations as to Infection Among All Members of 124 Households (Index Children Included) Experiencing Episodes of Infection in the Period 1953–1955 Prior to Vaccination

Homologous Immunity Prior to Episode	Age Group (Years)	Number of Persons		Virus Excretion Ratio[x]	Proved Infections	
		Total	With Sero-response		Number‡	Per cent
None	15 plus	23	15	3/7	15	65
	under 15	284	260	153/214	262	92
	all	307	275	160/221	277	90
Yes	15 plus	207	25	3/131	28	14
	under 15	101	37	4/77	38	38
	all	308	62	7/208	66	21

x—Ratio of persons found excreting virus to those whose stools were tested. It should be noted that, except for the index children, only single stool specimens were tested. Also, in a number of instances including persons associated with the episodes discovered only in retrospect, no specimens were examined.

‡—The number of proved infections is slightly greater in certain instances than the number of persons with seroresponse because of a few viral isolations from persons failing to manifest a clear-cut rise in antibody.

Table 4—Observation During 1956 and 1957 as to Infection Among Members of Vaccinated Households † Experiencing Episodes of Infection After Only a Primary Course of Salk Vaccine (45ˣ Households) and After the Booster Dose (5‡ Households)

Vaccination Status of Household and Year†	Homologous Immunity of Individual Prior to Household Vaccination	Age Group (Years)	No. of Persons		Virus Excretion Ratio△	Proved Infections	
			Total	With Sero-response		No.*	Per cent
Primary course only	none	15 plus	6	2	1/6	2	33
		<15	100	86	88/100	91	91
		all	106	88	89/106	93	88
1956	yes	15 plus	87	9	3/53	9	10
		<15	53	8	13/49	15	28
		all	140	17	16/99	24	17
Primary plus booster	none	15 plus	1	1	..	1	..
		<15	12	5	10/12	10	83
		all	13	6	10/12	11	85
1957 (8 months)	yes	15 plus	8	1	0/1	1	13
		<15	5	0	0/5	0	0
		all	13	1	0/6	1	8

†—Children naturally immune to all three virus types and many adults, without regard to their natural immune state, did not receive vaccine.

ˣ—Forty-five households in 1956 exclude two episodes in which single infected persons were undergoing reinfection and failed to infect a total of 12 other members (only one nonimmune).

‡—For only five of the 1957 episodes are the data complete; the sixth was so recent that conclusions as to extent of infection are not yet permissible.

△—Ratio as in Table 3. In this case, it should be noted that in 1956 and 1957 stools were collected twice each month from children under 15 years old whereas only single specimens related to known episodes were obtained from older persons.

*—As in Table 3.

data presented in Table 3 are now more nearly comparable with the corresponding data shown in Table 4 for episodes occurring after vaccination. Turning first in both tables to those with no natural immunity, it is apparent that infection spread among children under age 15 to a nearly equal extent whether unvaccinated (92 per cent), recipients of the primary course only (91 per cent), or of the booster dose in addition (83 per cent). The small numbers of older persons in the same categories make the comparisons less meaningful, the corresponding figures being 65, 33, and (on the basis of a single person) 100 per cent, respectively. Turning now to those with prior homologous natural immunity, it is evident that the primary vaccination did little to reduce their susceptibility to reinfection when exposed to an intrahousehold source, the percentages being 14 and 38 before and 10 and 28 after vaccination for the adults and children, respectively. The data for reinfections after the booster dose are scant and indicate certain reinfection of only one adult out of nine adults and five children. In evaluating the data in Table 4, it is important to note a further reason for failing to attribute significance to the minor declines noted in intrahousehold spread after vaccination. This is the increased difficulty of purely serologic detection of infection encountered when preinfection antibody titers are high, a point to be more fully discussed shortly. Over-all, the data sug-

gest that, while prior homologous natural immunity results in measurable resistance to reinfection, vaccination with Salk vaccine, even when reinforced by a booster dose, results in no significant development of resistance to alimentary infection by persons nonimmune prior to vaccination and in little or no increase in resistance to reinfection by those previously naturally immune.

In Tables 3 and 4 the immunity status prior to exposure has been considered only qualitatively. In Table 5 the same data are presented again but broken down by titer of homologous antibody prior to the infection episode. As might have been anticipated in view of the failure of vaccination to reduce susceptibility to infection, there is no significant correlation between the titer of antibody due solely to vaccination and the per cent of infections. Contrariwise, among persons with prior natural immunity, whether or not reinforced by vaccination, the proportion of proved reinfections decreases significantly with increasing preinfection titer of homologous antibody. Unfortunately, any correlation evident in Table 5 between infection and prior antibody titer may have little meaning. As we pointed out elsewhere,[3] demonstration of a significant rise in antibody becomes increasingly difficult with increasing titer of preinfection antibody. This demonstration, of course, is the most important criterion for detecting infection among adults from whom stool specimens were collected only after knowledge of the existence of an infection episode and it

Table 5—Relation of Infection to Titer of Homologous Antibody Prior to Episode of Household Infection Among Persons Immune Because of Vaccination or of Prior Natural Homologous Infection

Origin of Immunity†	Antibody Titer (1:x) Prior to Episode△	No. of Persons		Virus Excretion Ratio¤	Proved Infections	
		Total	With Sero-response		No.‡	Per cent
Only Salk vaccine	<10	55	52	52/55	53	96
	10–20	37	32	30/37	32	87
	40–80	10	5	7/10	7	70
	160+	10	2	8/10	8	80
	Total	112	91	97/112	100	89
Only infection	2–5	28	14	3/21	14	50
	10–20	70	17	2/52	18	26
	40–80	120	30	2/90	32	27
	160–320	135	16	5/95	18	13
	640–1280	48	2	2/34	3	6
	2560+	24	0	0/19	0	0
	Total	425	79	14/311	85	20
Infection plus vaccine	<40	0				
	40–320	12	2	4/11	4	33
	640+	24	0	4/24	4	17
	Total	36	2	8/35	8	22

¤, ‡—As in Tables 3 and 4.

△—Titer of homologous antibody in the serum specimen taken most recently prior to the infection episode.

†—The careful reader may have noted that, on the basis of figures in Tables 3 and 4, the total numbers in the categories by origin of immunity should have been 119, 308, and 153, respectively, for those only with vaccine, only with infection and with both. The differences, very considerable in two instances, derive from the fact that assignment in Table 4 was based on vaccination status of the household as a whole, whereas in the present table it is based on the individual. As explained in a footnote to Table 4, many household members (specially adults) were not vaccinated.

Table 6—Homologous Reinfections Among Naturally Immune Persons Exposed During Household Episodes of Infection by Virus Type and Without Regard to Possible Reinforcement of Immunity by Vaccination

Episode Virus Type	Age Group (Years)	No. of Persons		Virus Excretion Ratio[x]	Proved Infections	
		Total	With Sero-response		No.‡	Per cent
1	15 plus	123	11	1/83	12	10
	under 15	58	12	8/53	17	29
	all	181	23	9/134	29	16
2	15 plus	71	7	2/49	9	10
	under 15	42	17	3/37	18	43
	all	113	24	5/85	27	24
3	15 plus	108	16	2/73	16	15
	under 15	59	18	6/51	21	31
	all	167	34	8/123	37	22
Any	15 plus	302	34	5/201	37	12
	under 15	159	47	17/141	56	35
	all	461	81	22/346	93	20

x, ‡—As in Tables 3 and 4.

remains as an important adjunct in the case of those children who may excrete virus only briefly. This consideration is particularly important in relation to those whose immunity derived only from infection, since many of these were adults, but it also is of importance in the group of vaccine-immune children with antibody titers of 1:40 or higher. Among the 15 "proved infections" in this group, eight failed to manifest a significant antibody rise and were detected solely on the basis of virus isolation. These 15 infections, incidentally, include seven of the 11 infections in triply vaccinated persons which are shown in Table 4.

Another question with respect to susceptibility to reinfections is that of a possible relation to virus type. Sabin [6] has reported that homologous natural immunity is more effective in preventing infection after a constant oral dose of attenuated live poliovirus in the case of types 1 and 2 viruses (infection ratios of 1/11 and 3/11, respectively) than with type 3 virus (6/12 infection ratio). Our own data, based on the unmeasured challenge resulting from intrahousehold exposure of 461 persons, are show in Table 6, distributed by episode virus type and by broad age group. The differences observed are small and no meaningful pattern emerges; while type 3 virus caused the greatest proportion of reinfections among adults (15 per cent as compared with 10 for types 1 and 2), the same position among children belongs to type 2 virus (43 per cent as compared with 29 and 31 for types 1 and 3). The available evidence does not permit us to choose betwen various possible explanations for the discrepancy between Sabin's data and our own.

Susceptibility to infection is but one phenomenon related to viral spread which may be influenced by immunity. In so far as susceptibility permits infection, interest turns to the capacity of the immune but infected individual to serve as a source of infection for others. Our own studies provide some information pertinent to this question, especially since the beginning of 1956. The examination of twice-monthly stool specimens from all children under 15, begun at

this time, often enabled us to single out the person initially infected in a household. We already have shown, during 1956 and 1957, that the administration of a primary course and even of the booster dose of Salk vaccine does not result in decreased virus spread within a household. Since children were usually the first ones infected and all of them had been vaccinated, it follows necessarily that vaccinated children were effective sources of intrafamilial spread. In Table 7 the record of one type 1 episode in 1957 is presented to illustrate this point and also because it bears on the current interest in possible pharyngeal spread. In this family of six, only the mother was naturally immune to type 1 virus and only the three older siblings had been vaccinated (primary plus booster) when the episode occurred. Examination of stool and serum specimens collected late in December, 1956, when the booster dose was given revealed no evidence of infection. By January 30, 1957, when the next specimens were collected, the five- and four-year-old siblings had become infected as evidenced both by marked rise in antibody (to which vaccine also could have contributed) and by recovery of virus from the stool specimens. While the four-year-old, rather inexplicably, was not found to excrete virus again until April 6, the five-year-old excreted continuously through April 17. Presumably from one of these initial sources, three others became infected, namely, the father whose serum collected on March 25 contained newly appearing antibody and the two other siblings both of whose stool specimens became positive in April. Although no tests for pharyngeal virus were made, its presence is generally believed to be too brief to explain the long delayed spread (three to four months) to the other two siblings. With respect to spread from the reinfected naturally immune person our data are still very scant, and relate only to two episodes of 1956, previously reported,[4] in which the first and only infected members were undergoing reinfection and failed to transmit virus to a total of 11 immune and one nonimmune other household associates.

If one assumes that fecal virus is the chief source of virus spread, data as to duration and amount of virus excretion in the feces become important. Among

Table 7—Family Record of Household No. 115 Relating to an Episode of Type 1 Poliovirus Infection in 1957 and Illustrating Apparent Spread of Infection from Vaccinated Children (Primary Plus Booster[x])

Family Member		Titer of Type 1 Antibody			Isolation of Type 1 Virus on Date Indicated							
	Prevac †	After Primary	After Booster△	After Episode ‡	1/30	2/25	3/13	3/25	4/6	4/17	5/7	5/20
Father — 39 y	0	N.V.*	N.V.	80	N.S.o	N.S.	—	N.S.	—	N.S.	N.S.	N.S.
Mother — 33 y	160	N.V.	N.V.	320	N.S.	N.S.	—	N.S.	—	N.S.	N.S.	N.S.
Sib — 6 y	0	160	640	320	—	—	—	—	—	+	+	—
" — 5 y	0	5	640	640	+	+	+	+	+	+	—	—
" — 4 y	0	0	1,280	1,280	+	—	—	—	+	—	—	—
" — <6 mo.	0	N.V.	N.V.	320	—	—	—	—	+	+	+	—

x—Booster dose administered to three older siblings 12/27/57; parents were not vaccinated and youngest sibling (born in November, 1956) was not vaccinated until after episode.

†—Dates of bleedings shown as prevaccination for parents were 1/12/57 and 12/27/56 for father and mother, respectively, and for the youngest sibling, 4/2/57, or just prior to first virus isolation.

△—All postbooster sera were collected on 1/30/57.

‡—Dates of bleedings shown as after episode were 3/18/57 for all but youngest sibling which was 5/7/57; later specimens have been obtained in all cases but the results are not yet available.

*—N.V.=not vaccinated.

o—N.S.=no specimen.

Table 8—Duration of Fecal Excretion of Virus as Related to Homologous Immunity Prior to Infection

Prior Natural Immunity	Vaccination Status	Number of Children Excreting Virus	Days Duration of Virus Excretion: Observed Range	Observed Mean	Estimated True Mean[x]
None	None	112	1–114	24	51
	primary	84	1–105	25	42
	booster	11	1–77	24	41
Yes	Yes	16	1–43	9	24

x—Determined by adding the average interval (days) between collection of specimens to the observed mean period of excretion.

children without natural immunity there was little variation in the duration of excretion in relation to vaccination. The observed range and mean, respectively, were as follows: 1–114 and 24 days for 112 unvaccinated children; 1–105 and 25 days for 84 who had received only a primary course of vaccine; and 1–77 and 24 days for a small group of only 11 who also had been given a booster dose. By adding the average interval between collection of specimens to the observed means, the true mean durations were estimated to be 51, 42, and 41 days, respectively. In contrast, among naturally immune children undergoing reinfection, viral excretion was not regularly detected and among 16 who were shown to shed virus the range was 1–43 days with an observed mean of nine days and an estimated true mean of 24 days.

Rather surprisingly, however, tests for the amount of virus present in the first virus-positive specimen revealed nearly as much virus (4.2 mean long infectivity) in stools from children with prior natural immunity as in those, whether vaccinated or not, without natural immunity (4.0 to 4.9 mean log infectivity).

Discussion

The fundamental questions with which we are now concerned are the relationship of immunity, however derived, to susceptibility to alimentary infection with polioviruses and to the ability of the immune but infected person to serve as a source for further virus spread. Just a year ago, we presented a preliminary report[4] on our observations during the first seven months after completion of two-dose course of Salk vaccine. At that time, no evidence could be found that primary vaccination had influenced either the occurrence or course of alimentary infections in any way, whereas it was already clear that immunity resulting from natural infection did exert a significantly limiting effect. We also predicted that this lack of influence would prevail following booster reinforcement of vaccine-induced immunity. Now we have been able to present a more complete picture for the year following primary vaccination which differs in no significant way from the preliminary sketch presented and we also have preliminary data for an eight-month period following the booster dose.

In one important respect, the 1957 data do not appear to have fulfilled our predictions. Whereas by August 31, 1956, we had observed 40 infection episodes among some 118 observed households, during the same period in 1957 we have detected only six epi-

sodes among almost the same number of households. While depletion of susceptibles (meaning persons not naturally immune) undoubtedly occurred to an extent not yet measured, our data in their present form suggest that, in 1957 after booster vaccination, infection episodes have been relatively much less frequent than in previous years. Rather obviously, this parallels the nation-wide reduction in clinical poliomyelitis which some believe to be greater than can be explained by the direct protection afforded by vaccination. While natural variation in dissemination of virus, due to causes as yet unknown, seems to us to be a more probable explanation for the reduction in disease, a possible alternative could be reduction in virus spread mediated by increased herd immunity due to vaccination.

How this might be brought about then becomes a major question. Our own data for 1956 and the data of others are in agreement that a primary course of Salk vaccine does not alter susceptibility to or the course of lower alimentary tract infection either with wild viruses [7, 8] or with attenuated strains.[6, 9, 10, 11] Our own rather scanty 1957 data indicate that, once infection enters the household, vaccination reinforced by a booster also does not appear to reduce susceptibility to infection nor to influence fecal virus excretion. Only in chimpanzees has vaccination been reported to result in reduced fecal excretion of virus.[12] Thus it would appear that, if Salk vaccination is to be credited with a limiting influence on viral spread, it hardly can be by modifying either susceptibility to or the course of infections of the lower alimentary tract. This has led to renewed consideration of the possibility that pharyngeal virus is more important than fecal virus and that vaccination may influence upper alimentary or pharyngeal infection even though it has no effect on the process at a lower level. The available data do not seem to support this idea. In the first place, our data indicate that vaccination does not interfere with the mechanism mediating intrahousehold virus spread, whatever its nature. Second, the example of spread in household No. 115 which was delayed for at least three months in the case of two children seems incompatible with spread from a pharyngeal source. Third, even in the chimpanzee the influence of vaccination appears to have been relatively slight on pharyngeal virus in contrast to its marked effect on fecal virus.[12] And finally, there are the crucial observations of Horstmann and co-workers [10] with Sabin's attenuated type 1 virus. They recovered virus from the pharyngeal washings of six out of seven vaccine-immune volunteers who were fed virus in fluid form and demonstrated its continued presence for ten days in one "representative" case. Our feeling, thus, is that the reduction in viral spread, reflected in our experience and postulated to explain in some part the nation-wide reduction in disease, cannot be attributed to the use of Salk vaccine.

The other type of active immunity to poliovirus is that resulting from infection. We have cited substantial data from our experience indicating that natural immunity materially reduces susceptibility to infection resulting from intrahousehold exposure and also exerts a limiting influence on duration of viral excretion. We also have scant but interesting data compatible with the concept that the reinfected person is not an effective source for viral spread. Sabin [6] and Koprowski [9] have supported the concept of reduced susceptibility by direct challenge of naturally immune persons with attenuated virus. Horstmann and co-workers [10, 11] have confirmed these observations and, in addition, demonstrated the resistance of naturally immune persons to infection resulting from the spread of attenuated virus within an institution. As noted elsewhere,[4] natural infection appears to

result in some form of local immunity of the alimentary tract which is not promoted by vaccination with killed-virus vaccine.

There is an obvious temptation to transfer directly the very desirable attributes of naturally acquired immunity to that which follows oral vaccination with living attenuated polioviruses. Challenge experiments by both Sabin [6] and Koprowski [9] justify this in part by indicating that, in persons deliberately immunized by infection with attenuated strains, resistance to reinfection with these same strains is entirely equivalent to that of naturally immune persons. It would, therefore, seem safe to predict that, when the basic safety of live-virus vaccines is accepted, their widespread use would create the immunologic barrier to virus spread which some now attribute (we think unjustifiably) to use of the Salk vaccine.

Summary

From mid-1953 through August, 1957, we observed 177 episodes of household infections with polioviruses occurring among a study group consisting of between 157 and 118 representative households. Vaccination was begun in January, 1956, with a two-dose course of Salk vaccine and completed in December, 1956, when a booster dose was given. De novo development of antibody induced by the vaccine was excellent in children possessing one or two types of heterologous antibody but among triple negatives nearly a quarter and a half, respectively, developed no antibody after the booster to types 1 and 3 viruses. Infection episodes continued at unreduced frequency in 1956 after the primary course but declined sharply in 1957 after the booster dose. However, analysis of the data as to intrahousehold infections suggests that this decline is not due to the vaccine. Measurable resistance to infection on intrahousehold exposure and reduced duration of viral excretion when infection did occur were observed among persons with natural homologous immunity. In contrast, among persons without natural immunity, vaccination apparently exerted no influence on susceptibility to or the course of alimentary infection. Resistance to homologous reinfection among the naturally immune was possibly related to homologous antibody titer but did not differ significantly in relation to viral type. Infected but vaccinated children appeared to be just as effective sources for intrahousehold spread of virus as did unvaccinated children, whereas some evidence was obtained that infected but naturally immune children are ineffective sources. A delay of at least three months in viral spread in one episode is believed to be strong evidence against spread from a pharyngeal source. Because of the foregoing evidence and the observations of other workers including challenge experiments with live attenuated polioviruses, it is concluded that widespread use of Salk vaccine should not by any reasonable mechanism influence poliovirus dissemination.

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Jacobi Fellowship for Woman Physician

A graduate fellowship is being offered to a woman physician, either native or foreign, by the Women's Medical Association of New York City. The Mary Putnam Jacobi Fellowship provides a stipend of $2,000, given for medical research, clinical investigation, or postgraduate study in a specialized field of medicine, including public health. The committee is accepting applications between August 1, 1958, and February 1, 1959. The successful candidate will be notified by May 1, 1959.

Mary Putnam, who is honored through the fellowship, was the first woman student in the New York School of Pharmacy where she went because no medical school would accept her. She was the first woman graduate of l'Ecole de Médecine in Paris and the first woman admitted to the New York County Medical Society—in 1870—on motion of her future husband, Abraham Jacobi, M.D.

Further information from the secretary, Ada Chree Reid, M.D., 118 Riverside Drive, New York 24.

Based on investigations in Iowa during the summer and fall of 1956, the present study offers evidence that the B5 type of the Coxsackie virus produces benign aseptic meningitis.

EPIDEMIOLOGICAL STUDIES OF ASEPTIC MENINGITIS CAUSED BY COXSACKIE VIRUS B5

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DURING THE summer of 1956 Coxsackie virus Type B5 was found widely distributed in several midwestern states.[1, 2] In Iowa this virus appeared in association with several localized outbreaks of aseptic meningitis. The evidence that Coxsackie virus B5 was etiologically related to the illnesses observed was strengthened by a detailed study of the outbreak centering in Mason City. The paper presented here will describe the experiences encountered with this virus in Iowa with particular reference to the epidemiological observations made in the Mason City study.

Materials and Methods

This report includes a study of 194 individuals who had submitted fecal specimens for poliomyelitis surveillance study in Iowa during 1956, as well as the data obtained during the Mason City investigation. Of the 194 individuals studied, 166 were suspected of having nonparalytic poliomyelitis and 28 were asymptomatic familial contacts.

The investigation in Mason City consisted of studying all reported cases, which included both hospitalized and nonhospitalized patients. Of a total of 115 reported cases, 63 were hospitalized and 52 nonhospitalized. Uniform clinical and epidemiological data were obtained from all cases and more than half were examined by one of the investigating physicians. In addition, a household survey was conducted in Mason City and its surrounding communities for the purpose of defining the incidence of illness and other characteristics of the outbreak. Eight randomly selected areas in Mason City, four rural townships in Cerro Gordo County and an adjacent resort community were surveyed. Appropriate clinical and epidemiological histories were obtained from a total of 1,542 individuals in 404 households. Approximately one-third of this population was revisited about six weeks following the initial survey.

The specimens collected for etiological studies consisted of feces, throat washings, spinal fluids, and paired serums. Virus isolation and identification and neutralizing antibody determinations were performed in monkey kidney monolayer tissue cultures employing technics reported elsewhere.[3, 4] Selected samples of serums were also screened for presence of poliomyelitis-neutralizing antibody and for complement-fixing antibody against St. Louis, western equine and eastern equine encephalitis.

Extent of Coxsackie B5 Virus Infection in Iowa

Polio-like illnesses appeared in epidemic proportions in several Iowa communities during the summer of 1956. The illness was first noted in Polk County during early July, followed by occurrence of similar cases in other counties. In the middle of July an increased rate of hospital admissions of nonparalytic poliomyelitis was reported in Mason City, the county seat of Cerro Gordo County. Because the total picture of the illnesses observed was atypical of poliovirus infection, an organized study was instituted in Mason City and its surrounding communities. The results of virus studies of the specimens collected in the Mason City investigation supplemented by those submitted for routine poliomyelitis surveillance study permitted an estimation of the magnitude of spread of Coxsackie B5 viruses in Iowa.

A total of 193 cytopathogenic agents were isolated from fecal specimens of 329 individuals residing in different parts of the state. Of these, 193 agents 173 were Coxsackie B5 viruses, eight polioviruses, and 12 as yet unidentified.* Eighty-two of the B5 viruses were recovered from the specimens obtained in Cerro Gordo County and the remaining 91 strains came from other counties. Polioviruses were isolated from three individuals in Cerro Gordo County, three in Dubuque County, and one from each of two other counties. The 12 unidentified agents were recovered from residents living in different parts of the state. The distribution of the 193 agents is shown in Figure 1.

The frequency with which Coxsackie B5 virus was encountered in different

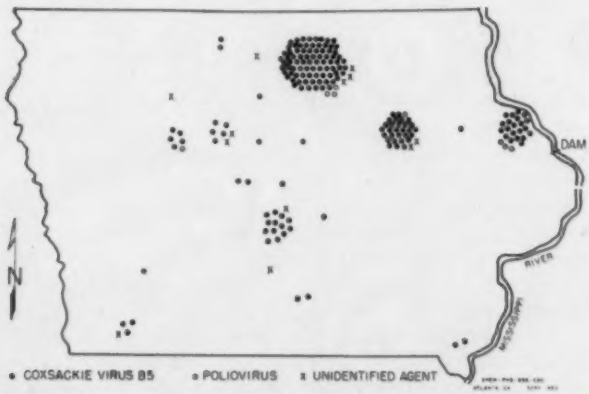

Figure 1—Distribution of 193 Cytopathogenic Agents Recovered from Feces of 329 Individuals, by Type, Iowa, 1956

counties is summarized in Table 1. In Cerro Gordo County 61 per cent of 135 individuals examined yielded the B5 virus in feces. Percentages above 50 were also observed in Black Hawk, Dubuque, and Polk Counties, with lower frequencies occurring in Webster and Calhoun Counties.

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* Since this paper was written, six of the 12 isolates were identified as follows: four were Coxsackie B5 and two Coxsackie A9. The remaining six isolates were still unidentified, although three of these isolates were neutralized by a pool of Coxsackie antiserums of Types A9, B1–B5.

Table 1—Frequency of Coxsackie B5 Virus Isolations from Feces of 329 Persons* by County, Iowa, 1956

County	No. of Persons	No. Positive	Per cent Positive
Cerro Gordo	135	82	60.7
Black Hawk	42	29	69.0
Dubuque	39	21	53.8
Polk	24	13	54.2
Webster	13	5	38.5
Calhoun	19	5	26.3
Others	57	18	31.6
Total	329	173	52.6

* Two hundred and forty-nine persons were ill and 80 not ill.

Epidemiological Characteristics of the Mason City Outbreak

The epidemic in Cerro Gordo County was centered in Mason City. Mason City has a population of 33,000 and is located in the central part of the county. An increased incidence of illness was observed during the second week of July when eight patients were hospitalized with a diagnosis of nonparalytic poliomyelitis. Similar cases continued to occur and the incidence reached a peak during the second week of August when 15 patients were admitted to hospitals. This was followed by an abrupt fall in incidence over the next three weeks. The distribution of the hospitalized cases during this three-month period by week of onset is shown in Figure 2. During the same period many cases of minor febrile illness were noted in the community and many of the cases appeared among intrafamilial contacts of primary cases of aseptic meningitis. It is noteworthy that the distribution curve of the survey cases, which included both patients with aseptic meningitis and minor illnesses, is strikingly similar to that of the hospitalized cases with the peak incidence occurring in the same week.

The over-all attack rate, based on a study of 1,542 individuals surveyed in Cerro Gordo County, was about eight per cent. The age-specific attack rate was highest among children under 10 years of age and there was a general reduction in the incidence with increasing age. No essential difference was observed in the sex distribution of cases. The above rates are summarized in Table 2.

The secondary attack rate was 15 per cent. This observation was based on a study of 198 individuals exposed to a reported case within families. Here, again, the rate was highest among children zero to nine years of age, and there was a downward trend with increasing age. These rates are shown in Table 3.

The illnesses observed in the Mason City outbreak had an extremely broad clinical spectrum, varying from a mild transient illness to a severe infection involving the meninges. In general, the illness was characterized by fever, headache, stiff neck, nausea and vomiting,

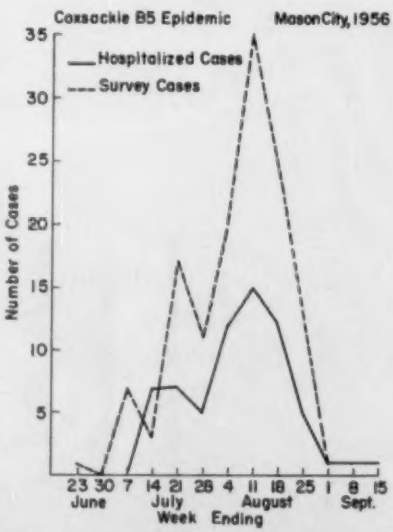

Figure 2—Comparison of Hospitalized and Survey Cases by Week of Onset

Table 2—Age- and Sex-Specific Attack Rates (Per cent) Based on a Random Household Survey of 404 Families in Cerro Gordo County, Iowa, 1956

Age Groups (Years)	Population Surveyed			No. of Cases			Attack Rates (Per cent)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
0– 9	216	193	409	35	24	59	16.2	12.4	14.4
10–19	148	133	281	9	8	17	6.1	6.0	6.0
20–29	55	75	130	5	7	12	9.1	9.3	9.2
30–39	95	98	193	7	8	15	7.4	8.2	7.8
40–49	97	108	205	4	7	11	4.1	6.5	5.4
50+	134	150	284	2	5	7	1.5	3.3	2.5
Unknown	18	22	40	1	0	1	5.6	0	2.5
All ages	763	779	1,542	63	59	122	8.3	7.6	7.9

myalgia, and sore throat. Chest pain was an infrequent complaint. The frequency of individual symptoms appearing among patients with meningeal irritation and among those with minor illnesses is presented in Figure 3. Patients with meningeal involvement, clinically categorized as having aseptic meningitis, invariably complained of headache and stiff neck. The fever, which was also uniformly present, ranged between 99° and 105° F with a median of 102° F. It is notable that with the exception of stiff neck the frequency distribution of symptoms among individuals with minor illnesses is similar to that of the patients with clinical evidence of meningeal irritation.

Table 3—Secondary Attack Rates (Per cent) Among Household Contacts by Age, Cerro Gordo County, Iowa, 1956

Age Groups (Years)	No. of Persons Exposed *	No. of Cases	Secondary Attack Rates (Per cent)
0– 9	71	17	23.9
10–19	30	4	13.3
20 and over	97	8	8.2
All ages	198	29	14.6

* Analysis was limited to 53 families with reported cases.

The median duration of illness among patients with aseptic meningitis was nine days and among those with minor symptoms about three days. In more severe

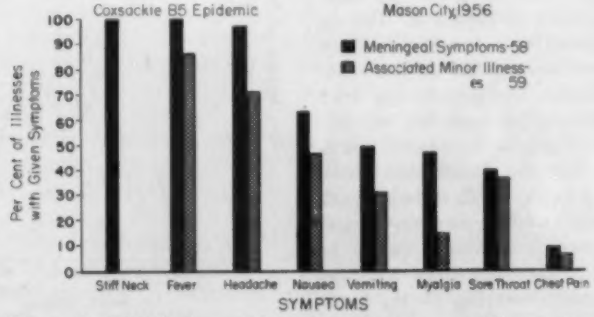

Figure 3—Distribution of Symptoms by Type of Illness (Reported Cases)

cases the duration of symptoms persisted for as long as three weeks.

Positive physical findings were remarkably few. Even in patients with meningeal involvement the findings were limited to nuchal rigidity and pharyngeal injection. Transient muscle weakness was occasionally observed.

Pleocytosis was invariably present in the spinal fluids of patients with clinical evidence of meningitis. The average number of cells per cubic millimeter of fluid was 570, with the highest count 2,400. Polymorphonuclear leukocytes were the predominant cell type observed when spinal fluid was obtained early in the illness; later mononuclear cells were the most common type found. The total protein values varied from 15 to 90 mg per cent, with an average value of 41 mg per cent. About one-fourth of the patients examined had a total protein above 45 mg per cent. It is of interest that spinal fluid pleocytosis was found in seven patients in whom no signs of meningeal irritation could be elicited.

Minor illnesses were frequently observed among members of a household in which there was one or more cases of aseptic meningitis. Among 1,542 individuals surveyed, there were 25 cases of aseptic meningitis and 97 cases of minor illnesses, or a ratio of approximately one to four.

Evidence Implicating Coxsackie Virus B5 as a Cause of Aspetic Meningitis and Minor Illnesses

In the Mason City study Coxsackie virus B5 was recovered from the feces of 82 of 135 individuals examined. The frequency with which this virus was detected in the feces of these individuals, analyzed according to type of illness, is summarized in Table 4. The B5 virus was found in 75 per cent of the patients with aseptic meningitis and in 71 per cent of the patients with minor illnesses. Among 42 asymptomatic familial contacts examined, about 43 per cent excreted the virus in their stools. Coxsackie virus B5 was also detected in three of 10 well persons who gave a history of no known contact.

Table 4—Frequency of Recovery of Coxsackie Virus B5 from Feces of 135 Persons by Clinical Status, Mason City, Iowa, 1956

Clinical Status	No. of Persons Tested	No. Positive	Per cent Positive
Aseptic meningitis	48	36	75.0
Minor illness	35	25	71.4
No illness			
Family contact	42	18	42.9
Contact unknown	10	3	30.0
Total	135	82	60.7

Among 46 individuals who contributed throat washings for study, Coxsackie virus B5 was found in 12 (26 per cent). All 12 individuals had either aseptic meningitis or minor illnesses. In addition, two of 19 cases of aseptic meningitis that were studied yielded the B5 virus in their spinal fluids.

Paired serums obtained from 56 individuals with positive Coxsackie B5 virus isolations were studied for development of homotypic neutralizing antibody. The results of these tests analyzed according to history of illness are summarized in Table 5. Twenty-one of 25 patients with aseptic meningitis developed neutralizing antibodies against Coxsackie B5 virus. A rise in antibody (fourfold or greater) was noted in 15 persons and in six antibody titers between the first and second serum remained unchanged. The serums of the remaining four individuals did not neutralize the B5 virus. Among the 15 patients with minor illnesses, rising antibody titers were detected in 13 patients; one had no titer change and one failed to develop any measurable amount of antibody. Thus rising titers were demonstrated in 70 per cent of the pa-

Table 5—Neutralizing Antibodies * in Paired Serums of 56 Individuals Excreting Coxsackie B5 Virus by Clinical Status, Mason City, Iowa, 1956

Clinical Status	No. of Persons Tested	Antibodies Present in One or Both Serums (1:4 or >)	Antibody Titers Between First and Second Serum			Antibodies Absent in Both Serums (<1:4)
			Rise of 4x or >	No Significant Change with		
				Titers 1:32 or >	Titers <1:32	
Aseptic meningitis	25	21	15	5	1	4
Minor illness	15	14	13	1	0	1
Asymptomatic † contact	16	15	10	4	1	1
Total	56	50	38	10	2	6

* Against 100 $TCID_{50}$ of Coxsackie B5 virus.
† Thirteen had intrafamilial contact; three had no known contact.

tients studied. Antibody measurements were also made on the serums of 16 persons who apparently had experienced subclinical infections. Ten of these individuals showed antibody rise; five had unchanging titers between the first and second serum; and one failed to develop detectable antibody.

In summary, 89 per cent (50) of the 56 individuals tested developed neutralizing antibody against Coxsackie B5 virus in one or both paired serums. Fourfold or greater antibody rise was demonstrated in 68 per cent of these individuals studied. Twelve persons (21 per cent) had antibodies present in the initial serum, but there was no subsequent rise in titer; 10 of these 12 had antibodies titering at least 1:32 and two had titers between 1:4 and 1:16. Serums of six individuals failed to neutralize the B5 virus (100 $TCID_{50}$).

Paired serums of 30 individuals were tested for neutralizing antibodies against poliovirus Types 1, 2, and 3, using the pH color test described by Melnick and Opton.[5] Significant antibody rise (greater than fourfold) was found in two individuals, one against Type 1 and the other against Type 3. Coxsackie virus B5 and type-specific antibody rise, however, were also demonstrated in these two individuals. In addition, five had a fourfold titer rise, three against Type 1, one against Type 2, and one against Type 3. One of these three individuals with fourfold antibody rises against Type 1 poliovirus also had a concomitant fourfold rise against Type 3 poliovirus. Rising titers were not found in the serums of the other 23 persons examined.

Complement-fixation tests for St. Louis, western equine, and eastern equine encephalitis were performed on paired serums of 10 patients. Antibody against these viruses was not present in these serums.

Discussion

It is now well established that Coxsackie B viruses are important causative agents of benign aseptic meningitis. Studies during the past 10 years have revealed that among this group of viruses, Types B1, B2, B3, and B4 have been frequently found in the gastrointestinal tract of patients during the poliomyelitis "season," as well as in association with well defined outbreaks of

aseptic meningitis.[6–11] Until the summer of 1956 the type B5 Coxsackie virus, first isolated by Steigman in 1952,[12] had been infrequently encountered in human illness. The data from the studies in Iowa have provided evidence to relate this virus as another member of the Coxsackie B group giving rise to the syndrome of benign aseptic meningitis.

The studies in Iowa have indicated that Coxsackie virus B5 was widely distributed in the state during the summer and fall months of 1956 and was the primary agent responsible for several localized outbreaks. It is of note that Coxsackie B5 viruses were recovered from over 50 per cent of the fecal specimens obtained from different parts of Iowa, while only about 2 per cent were shown to contain polioviruses.

The illnesses observed in the Mason City outbreak varied widely in their clinical manifestations. The evidence, however, was quite clear that the minor illnesses observed in association with the primary cases of aseptic meningitis in families represented clinical variations of the same disease. This view was supported by both epidemiological and etiological studies. It was noted that the age distribution of patients with aseptic meningitis and with minor illnesses were similar.[13] In addition, the epidemic curve for the survey cases, comprising predominantly minor illnesses, was almost identical with that of the hospitalized cases. Recovery of the same virus together with emergence of specific antibodies in patients of both categories provided further evidence to support this thesis.

The virus can be readily isolated from feces and oropharyngeal secretions and from spinal fluids when specimens are obtained during first few days of the illness. In this study the virus was recovered from feces of three out of four patients with either aseptic meningitis or minor illness. Virus excretion, accompanied by emergence of specific antibodies in a high proportion of the asymptomatic familial associates, suggests that subclinical infection was a common experience.

Infection with Coxsackie B5 virus was almost always accompanied by development of homotypic neutralizing antibodies. Nearly 90 per cent of 56 individuals with virus excretion possessed type-specific antibodies. Fourfold or greater rise in titer was demonstrated in 70 per cent of the patients studied. Among the patients in whom the initial serum was obtained within the first week of illness, 82 per cent were shown to have rising titers.[8]

Special comments should be made of the six individuals whose serums failed to neutralize the B5 virus. In these instances laboratory contamination must be considered, but this is unlikely because the same virus could be reisolated from the original fecal specimens, and in one of these individuals the virus was also detected in the oropharyngeal secretion. Other possible explanations are the development of antibody levels too low to be detected by the methods used, or antigenic variations among intratypic strains. Preliminary studies showed that serum neutralization could be demonstrated in four of these individuals when the patient's own virus was used in the tests.

The increased attack rate among children under 10 years of age is worthy of note. The possible reasons for the higher rate of infection among younger children may be related to: (1) increased risk of exposure to infected cases, and (2) greater susceptibility due to low-specific seroimmune status. Assuming all household contacts of an index case were equally exposed, the lower incidence of secondary cases observed among older individuals probably reflect antecedent immunity resulting from previous infection with an agent similar or antigenically related to the B5 virus. The evidence supporting

this view is further substantiated by the lower frequency of virus excretion among household contacts in the older age group.[3]

Summary

During the summer of 1956, Coxsackie virus B5 was found widely distributed in Iowa; this virus was associated with localized outbreaks in several counties. The evidence that the B5 virus was etiologically related to aseptic meningitis and associated minor illnesses was reenforced by the observations made in the Mason City outbreak. Coxsackie virus B5 was recovered from feces of 75 per cent of the patients with aseptic meningitis and from that of 71 per cent of the patients with minor illnesses. The B5 virus was also recovered from the oropharyngeal secretions of 12 patients and from the spinal fluids of two patients. Infection with Coxsackie B5 virus was invariably accompanied by development of homotypic neutralizing antibodies.

The attack rate was approximately 8 per cent, with the highest rate of infection occurring in children under 10 years of age. The secondary attack rate among intrafamilial contacts was 15 per cent. Subclinical infection among contacts was also commonly observed.

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In studying the admissions of mentally defective children to a state school the authors of this investigation found the occurrence of this condition is apparently related to the season of conception. They offer a possible explanation with important public health consequences.

SEASONAL VARIATION IN THE BIRTHS OF THE MENTALLY DEFICIENT

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IT IS well known that the time at which injury to the developing fetus occurs results in a differential effect on the production of congenital anomalies. The embryonic stage, rather than the specific nature of the prenatal stress, appears to determine the type of malformation that will appear. Defects will manifest themselves in those organ systems that are undergoing the greatest amount of differentiation or organization at the time of the injury.[1] In the central nervous system [2] damage which occurs prior to the eighth week of fetal life usually results in gross anomalies, many of which are incompatible with life. During the eighth to 12th week the cerebral cortex is undergoing its organization into the various molecular layers, and this period would be the critical time during which maternal stress would be apt to lead to those neuropsychiatric disabilities which result from cortical disorganization.

Infectious diseases play prominent roles in the production of central nervous system damage. Congenital lues in the past was one of the major conditions which acted during fetal life to produce remote as well as immediate damage to the brain. In the more recent past reports have appeared about the effect of rubella in the first trimester of pregnancy in the production of several central nervous system defects. Viral infections operate in the postnatal period to damage the brain and their effects are easily observed. The influence of similar infections in the mother during pregnancy is not as easily subjected to investigation, but it may be equally if not more important.

As a starting point, one of a series of neuropsychiatric disabilities—mental deficiency—was selected and a study designed to test the hypothesis that, because of the variation in the prevalence of viral infection, differences in the incidence of mental deficiency would occur which would be dependent on the season of birth. Infants conceived in the winter months it was postulated would have an increased incidence of mental deficiency when compared to infants conceived in the summer months, because of the increase in the prevalence of these infections during the colder seasons.

Materials and Method of Study

The birth dates of all individuals who had ever been admitted to the Columbus State School were supplied by the Statistical Bureau of the Division of

Mental Hygiene; patients who were born between 1860 and 1949 were included. The number of admissions in the years before the turn of the century and even well into the twentieth century was obviously small, either because of the incompleteness of the records or because of the limited facilities available. Likewise, because of the policy of the school of not admitting children under the age of six years, less than a dozen were born after 1948 at the time that the list was compiled. Since a minimum of 100 individuals per year was admitted from 1913 through 1948, the analysis was made on patients born in those years.

The number of births in each month was supplied by the Ohio State Health Department. These data were available for all of the years during which adequate numbers of admissions occurred with the exception of 1946, and this year was consequently eliminated from consideration. A rate which can be considered a "first admission rate" was then calculated according to the month of birth for those years already delineated above. This rate would express the seasonal variation in births of the mentally deficient. It is obviously not a precise expression of the differential incidence of mental deficiency, but is sufficiently analogous to permit substitution of the single word "incidence" for the more cumbersome phraseology.

It was recognized that, at the very most, only 10 per cent of all of the mental defectives born in the state were admitted to the Columbus State School. Admissions are allocated to the 88 counties of the state strictly on the basis of county population, some counties having 24 admissions per year and some many times that number. Since the children are six years of age by the time that they are admitted, month of birth is not likely to be a factor taken into consideration in any decision to admit a child. It was also recognized that neither could account be taken of the precise amount of in- and out-migration; we do not believe that a decision to move is influenced by the month in which a child is born, however. There is no reason to believe, therefore, that bias would be introduced by either of these factors because of season of birth.

Findings and Discussion

There is variation in the "first admission rate" for mental deficiency and the rate per 1,000 live births by month of birth is shown in Table 1. Contrary to what was predicted by the hypothesis, however, the greatest incidence occurs not in the late summer and early fall months but rather in the winter months, the peak being found in February. This highest rate of 1.507 per 1,000 births for February is significantly higher than the rate of 1.297 for its seasonal counterpart for August (C.R.$=2.36$; $P<0.02$). Likewise, the rate of 1.442 for the first three months of the year is significantly higher than the rate of 1.318 for the contrasting months of July, August, and September (C.R.$=2.43$; $P<0.02$). These data are shown in Table 2. For the infants born in February the critical eighth to 12th week of the gestation period would be the month of July.

Several possible explanations for this finding immediately come to mind. Since there is a higher admission rate to the Columbus State School from the lower socioeconomic groups and also a higher incidence of mental deficiency in these groups, any differential between upper and lower socioeconomic groups in the planning of pregnancies would be reflected in the number of patients born in each of the different seasons. The assumption would be, then, that the upper economic groups planned their pregnancies so that their babies were delivered in July and August. This explanation has already been suggested by Goodenough [3] as the explanation for her observation of a slight superiority

Table 1—Mental Deficiency First Admission Rates by Month of Birth, Columbus State School, 1913–1948 (Excluding 1946)

Months	No. of Births	No. of Admissions	Rate/1,000
January	358,848	503	1.402
February	339,704	512	1.507
March	365,631	520	1.422
April	342,624	475	1.386
May	350,131	485	1.385
June	349,894	472	1.349
July	373,853	494	1.321
August	377,085	489	1.297
September	361,995	484	1.337
October	354,558	463	1.306
November	334,113	473	1.416
December	342,881	485	1.414
Total	4,251,317	5,855	1.377

in IQ's of school children born in the summer months. It would not seem logical to plan to have children in the two hottest months of the year, but fortunately data are available and it is possible to examine the facts without having to inquire into motives.

There is a significant difference in the number of births by month. Analysis of some four million births in Ohio in the period from 1910 to 1955 indicates that the highest birth rates occur in July, August, and September. There is, curiously enough, another peak in February. Data on over 160,000 births in New York City in 1956 show a similar pattern. Data on approximately 23,000 births in Baltimore were used in comparing the upper and lower socioeconomic groups. Census tract of residence was the criterion for placing a birth into a given economic 10th of the population. The peak number of births for the smaller series

Table 2—"First Admission Rates" for Mental Deficiency by Season of Birth, Columbus State School, 1913–1948 (Excluding 1946)

Season	No. of Births	No. of Admissions	Rate/1,000	
February	339,704	512	1.507	C.R. = 2.3
August	377,085	489	1.297	$P < 0.02$
January, February, and March	1,064,183	1535	1.442	C.R. = 2.4
July, August, and September	1,112,933	1467	1.318	$P < 0.02$

tends to be in September, October, and November. There are, however, no significant differences according to socioeconomic status; if anything, there appears to be a somewhat higher birth rate for the upper socioeconomic groups for the winter period when compared to the lower socioeconomic groups. Differential planning of birth appears, therefore, to be an inadequate explanation for the seasonal variations in the births of the mentally deficient.

Mills has written extensively on the effects of climate on health and disease in man and animals. He indicates,[4] for instance, that in the rat thiamin requirement doubles as the temperature changes from 65° F to 90° F. Members of the vitamin B complex act as catalysts at specific stages in glucose combustion and there has been much speculation about the effects of the alteration in the metabolism of glucose on the functioning of the central nervous system. In rats there are also many differences in learning and retention when litter mates kept on uniform diets for three months are reared in temperatures of 55° F, 75° F, and 90° F.[5] This effect apparently carries over to human beings as well. As only one example, students taking college entrance examinations during the summer achieve only about 60 per cent of the ratings obtained on the same examination given in the winter.

More important than performance under diverse environmental conditions, perhaps, is the relation of the month of conception to certain later functions. Mills reports that children in the Cincinnati latitudes who are conceived in the summer months have just half the chance of entering college as those conceived in the winter months. There is a low likelihood of being included in "Who's Who" if there is a summer conception and only four out of the 33 presidents were conceived in the third quarter of the year. Peterson[6] has shown findings similar to those of our own, namely that feeble-minded children are more frequently conceived in the summer months. Mills[7] tends to attribute all of these findings to the beneficial effects of atmospheric instability and environmental stimulation, and the consequent greater metabolic potential of the germ cells.

Mills[5] also mentions that it has been shown, in animals at least, that it is possible to control the depressing effects of heat by adequate diet, particularly in respect to the vitamins and protein, and he points out that it is probably necessary to have proportionately more protein to meet the minimum requirements during the summer months when the total caloric intake is reduced.

In a study of a group of New Haven Negro infants born during the years of World War II[8] we demonstrated that white physical and behavioral developmental norms were followed. The only intragroup correlation was the significant superiority of those infants who were above weight at birth, as well as at the time of examination, over the infants who were below the median in weight at both times. It was felt that these findings could be explained on the basis of adequate prenatal care and adequate nutrition during pregnancy consequent to increased employment and wartime rationing.

On the basis of these findings it was postulated that the relationship between temperature and intellectual performance might, perhaps, be greatly influenced by the fact that the diet of the mothers may be poor in the hotter months of the year, and that this lowered dietary intake exerts its greatest effect during the eighth to 12th week of gestation. If this were true, then it should be possible to demonstrate a difference in the incidence of mental deficiency on the basis of variations in temperature from one year to another.

Accordingly, the monthly mean temperatures for the six largest Ohio cities

for which data were available were averaged. The temperatures during June, July, and August were those considered, since these were the months in which the eighth to 12th week of gestation corresponded to those months of the year with the highest incidence of mental deficiency. The years in which the mean temperature was above the median were then contrasted with those years in which the temperature was below the median. These data were also based on the years from 1913 to 1948.

The differences in the "first admission rates" for mental deficiency, according to whether the mean temperature for the month was above or below the median, are shown in Table 3. When the eighth to 12th week of pregnancy occurred in June, there are no significant differences in the incidence of mental deficiency between those years with temperatures below and above the median. For July and August the differences are highly significant. The rates in those years where the average temperature was above the median were 1.658 per 1,000 births for July and 1.519 for August, compared to rates of 1.276 and 1.206, respectively, in those years when the average temperature was below the median. Likewise, the differences for the total three-month period of June, July, and August were highly significant, being 1.524 for those years where the weather was hot compared to 1.295 for the cooler years ($X^2=10.02$; $P<0.001$). These differences between the warmer and cooler summers are greater than the differences observed between babies born in the first three months of the year and those born in the third quarter. The difference for the month of July on the basis of mean temperature is actually three times as great as the difference between the first and third quarters of all of the years under investigation. These highly significant differences would tend to support the hypothesis that inadequate dietary intake in early pregnancy during the hot summer months has an adverse effect on the development of the child. The number of cases was too small to permit analysis of variations from one season to another from year to year. Before combining all of the years together, however, variation in rates from

Table 3—"First Admission Rates" for Mental Deficiency by Month of Birth According to Mean Temperature During the 8th to 12th Week of Pregnancy, Columbus State School, 1913–1948 (Excluding 1946)

		8th to 12th Week of Pregnancy			
		June	July	August	Total
Mean Temperature		70.19	74.30	72.73	....
Temperature Below Median	No. of Births	170,788	175,522	186,494	532,804
	Admission Rate/1,000 Births	1.411	1.276	1.206	1.295
Temperature Above Median	No. of Births	181,126	171,293	187,598	540,017
	Admission Rate/1,000 Births	1.402	1.658	1.519	1.524

$X^2 = 10.02$
$P < 0.001$

one year to the next was examined. It was immediately obvious that in the depression years the rates were very much higher than in the nondepression years in both the post-World War I depression and the depression of the 1930's. However, the temperature differences for the so-called "boom years" and for the "depression years" were the same as for the total. Within each group the hotter summers were followed by a higher incidence of mental deficiency in the winter months, regardless of whether the over-all rate for the block of years was high, as in the depression years, or low, as in the boom group.

These findings appear to form one more link in the chain of events demonstrated by our previous studies of the association of prenatal and paranatal factors with the development of neuropsychiatric disabilities and the hypothesis of a continuum of reproductive casualty. These previous studies indicated that the complications of pre- and paranatal periods, particularly the chronic anoxia producing ones, such as toxemia and bleeding, and prematurity, were associated with an increased incidence of a series of clinical conditions ranging from cerebral palsy [9] through epilepsy,[10] mental deficiency,[11] behavior disturbances,[12] reading disturbances,[13] and tics.[14] A higher incidence of these complications of pregnancy was demonstrated in the lower socioeconomic groups [15, 16] where dietary factors might be of considerable importance. Some authors [17] have demonstrated that toxemia of pregnancy can be prevented by supplying a diet adequate in protein and vitamins to the mother during gestation and at this time probably the most widely accepted theory of the cause of the toxemias of pregnancy is inadequate protein intake. There may, of course, also be a direct effect of protein deprivation on the production of mental deficiency per se without the necessity of the intermediary influence of toxemia. There have been many reports on a number of differences in infants whose mothers' diets have varied during pregnancy.

Under these theoretical assumptions one would expect to find differences similar to those in mental deficiency in the incidence of complications of pregnancy, and obstetricians are aware of a seasonal variation in toxemia. The New York City Health Department supplied data on the proportion of live birth certificates reporting one or more pathological conditions during pregnancy in 1956. Findings to be reported elsewhere indicate that all of the complications of pregnancy predicted by the hypothesis are significantly higher in the winter months.

These findings do not invalidate the infection hypothesis or preclude other explanations for the differences found. Infectious diseases probably play an important role prenatally. Since it is more likely that they act to a larger extent in the winter months rather than in the summer, these findings are only strengthened. As a matter of fact, the incidence of summer encephalitis was examined in an attempt to correlate it with the rates of admissions for mental deficiency and it was found that the rates were lower in the years when encephalitis was high in the summer months, although not significantly so. Another factor that immediately comes to mind as being associated with hot summer weather is salt depletion and this may very well play a role, the exact nature of which is not immediately clear at the present time.

There are, undoubtedly, complex interactions of many environmental influences which alter susceptibilities and change the manifestations of central nervous system damage. We are engaged in further investigations which may elucidate the etiologic factors and open up greater possibilities for prevention. A host of additional epidemiologic studies immediately comes to mind

—an investigation of all the neuropsychiatric disabilities and complications of pregnancy by seasonal and temperature variation; the effect of geographic location on the production of differences in incidence; the influence of hyperemesis gravidarum on the development of the child. Intensification of dietary and behavioral experimentation with laboratory animals, where the experimenter can vary conditions at will, also appears indicated.

These findings also add to the mounting body of evidence, based on studies done by others as well as ourselves, that the characteristics of a human being are far from being immutably determined by the genes at the moment of conception. Environmental factors act continuously on the fetus from this moment, if they have not already significantly affected the parents also, to determine the anatomical structure as well as behavioral functioning. Except for a comparatively few and rare hereditary disorders, life experiences, rather than inherited characteristics, may be the primary factors making one individual significantly different from the next.

It does not appear necessary, however, to wait until the last iota of evidence is in proving the association of diet and disability. Present knowledge, exclusive of the results of this study, would appear sufficient to demand that public health workers turn their attention more directly to this problem. We are well beyond the stage of paying lip service to the importance of the chronic diseases; possible avenues for prevention should be seized upon—and action taken. In a field as complex as behavioral functioning prevention of dysfunction is often the only method of demonstrating etiology.

The possibility of dietary control in the prevention of disability need not be confined to efforts in this country, even though we recognize the tremendous cost of the neuropsychiatric disabilities in terms of chronicity, loss of productivity, family dislocation, and the need for provision of care.

There may be much more to gain in the developing countries which are, by and large, the tropical ones. The inability to improve productivity to support their increase in population, which is largely a result of public health measures in controlling acute infectious diseases, may well hinge on the long-term effects of diets which we know to be suboptimal. It seems likely that this damaging influence is acting not only on the present generation, but also on future individuals yet unborn to produce a whole series of neuropsychiatric disabilities. Breaking the vicious cycle by a concerted attack at one point, namely, women in the child-bearing period, could be extremely rewarding.

Summary

In studying the admissions of mentally defective children, born in the years 1913–1948, to the Columbus State School, it was found that significantly more had been born in the winter months, January, February, and March. Since the third month after conception is known to be the period during pregnancy when the cerebral cortex of the unborn child is becoming organized, any damage which occurred at that time could affect intellectual functioning. The months when this might happen would be June, July, and August, the hot summer months, when pregnant women might decrease their food intake, particularly protein, to dangerously low levels and consequently damage their developing babies. If this were so, one would expect that hotter summers would result in significantly more mental defectives born than following cooler summers. This was exactly what was found to a highly significant degree. Possible explanations of the above findings were sought in the occurrence of summer

encephalitis and an increased birth rate in the lower socioeconomic group, but these were not confirmed.

These findings have wide public health implications, since the writers have shown previously not only that physical growth is affected by what happens to the unborn child but also that cerebral palsy, epilepsy, and even behavior and reading disorders may follow damage during this period. There is a growing body of evidence which indicates that it is very important for women in the child-bearing age to have good diets if they are to produce healthy, normally developing children. Inadequate dietary intake during pregnancy, because of heat as well as substandard economic conditions, may be an important link in the vicious cycle that results in poor physical and mental growth.

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Dr. Knobloch is director, Clinic of Child Development, and associate professor of pediatrics, Ohio State University College of Medicine, and Dr. Pasamanick is director of research, Columbus Psychiatric Institute and Hospital, and professor of psychiatry, Ohio State University College of Medicine, Columbus, Ohio.

This paper was presented before the Mental Health Section of the American Public Health Association at the Eighty-Fifth Annual Meeting in Cleveland, Ohio, November 12, 1957.

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Journal of Public Health

EDITORIALS

The Annual Meeting

THE PUBLIC health worker frequently suffers acutely from "aloneness." This is particularly lamentable in light of today's emphasis on "togetherness" along with increased knowledge of the value of group interaction. Probably no one questions any longer the productiveness of occasionally assembling with others, whether it be one or 1,000, to hear the new ideas and to bounce our ideas off others who may return them in amazingly different and stimulating forms.

Perhaps one of the reasons for a particular need on the part of the public health worker for this kind of interaction lies in the fact that he is so frequently, in many smaller jurisdictions, the only one of his kind in the community. There may be dozens of other doctors, educators, engineers, and nurses with a common interest and yet the health officer, the sanitary engineer, the public health nurse director, or the health educator may have no counterparts in that particular community. Of course, there are vicarious ways of securing this kind of professional fellowship and achieving this interplay. One of them is through reading our professional journals and another is through correspondence with our friends and professional associates in other parts of the world.

But perhaps the most satisfying of all mechanisms for securing professional stimulation, a recharging of our batteries and enthusiasm in and for public health, of sharpening our professional wits and implements by matching them with those of our confreres, and of benefiting by the experiences and current experiments in our field, is through the Annual Meeting of the American Public Health Association.

Here we get the dual opportunity of mixing with those doing similar work and of being exposed to the thoughts and experiences of a whole galaxy of related disciplines. Through our own section meetings and personal contacts with others we can discuss successes and problems in our particular field; through joint section programs and our general sessions we can see the whole field of public health in its broader and truly multidisciplinary aspects; and through attending the meetings of related organizations we can gain a new perspective as to the place that public health is assuming in the developing pattern of social welfare throughout the world.

The purposes of professional organizations have been analyzed and discussed

at various times in the past and a considerable variation has been exhibited in attempting to define them in our civilization. But there is one function which has apparently been universally accepted, namely, the improved effectiveness which should be expected through conferences of a professional group like ours. A glance at the preliminary program which appears later in this Journal gives us a partial answer—for the scope of topics to be discussed in St. Louis next month is as wide as the whole spectrum of factors affecting the health and welfare of mankind. This is not of the order of magnitude that can be readily grasped by most of us alone. And yet the problem of at least a basic understanding of these many subjects becomes a little less impossible of solution when we think of it as a series of finite presentations on specific problems.

What a textbook the proceedings of our annual meetings would make! If it were possible for one of the new "electronic brain" machines with a memory to store in its transistorized gray cells all of the experience and wisdom recorded during our past 85 meetings, it is conceivable that by pushing a button we could secure the answers to most of our current and future health problems. We hope that it will be possible for you as a reader of the Journal to come to St. Louis and hear the papers presented which will make up much of next year's Journal content. If you do so, you will have the opportunity of participating in the program, of questioning the authors, of hearing the informal reaction to many of the new and challenging program developments which will be presented. But for those of you who will not be able to attend, the Journal promises to continue to provide as early as possible, and in as much detail as possible, those presentations which seem to be of greatest interest to us all.

A Puerto Rican Experiment in Regionalization

THOUGH THE Hospital Survey and Construction Act of 1946 strongly emphasized the concept of regional planning, the organization of health care services on a regional basis has not made much headway since then. Yet, as the Commission on Hospital Care pointed out in 1947, regional organization is designed to solve a number of problems. Some of these are: How can the quality of care be improved without exorbitant increases in cost? How can the influence of teaching hospitals and medical schools be extended to rural areas? How can the practicing physician and other health service personnel be kept up to date? Furthermore, it felt that regionalization could provide assurance of all essential professional services, but without duplication. Basically, the purpose of regionalization is to have the tax—or insurance dollar—by the largest possible quantity and the highest possible quality of health and welfare service.

For this reason it is a matter of considerable interest that the Commonwealth of Puerto Rico has undertaken a pilot regionalization demonstration for the health and welfare services of the 17 communities of Bayamón region. This project is the first endeavor to achieve comprehensive regionalization in any area which is part of the United States.

In 1947 the Bureau of Hospital Survey and Construction described a possible regionalization plan adapted to the Puerto Rican situation. It envisaged community health and welfare centers which would service the people directly, district hospitals to "backstop" the community centers, and a base hospital to serve also as the teaching hospital of the medical school. This hospital would set standards and train personnel for the entire system. Accepting in principle the recommendations of the bureau's

report, the Commonwealth government initiated a survey to determine how the Puerto Rican health services could be improved through regionalization. While the survey was to consider the island as a whole, it would focus more specifically on the Bayamón district.

The Bayamón area was selected because it includes and lies compactly around the San Juan metropolitan area which has the largest concentration of population on the island. Improvement of health services in this area would therefore be of immediate benefit to a large number of people. Furthermore, while the district is largely urban, it also contains a number of small rural municipalities. Their integration into the new system would pave the way for dealing with the rural towns and areas of which other districts are chiefly composed. Finally, the situation of the School of Medicine at San Juan would make it possible to use members of its faculty as consultants.

The survey comprised the major segment of the planning phase of the regionalization project. Implementation of the recommendations based on the survey was to be the second, or action phase of the project. It was felt that one area, the Bayamón district, would first be regionalized, and the experience gained there could then be applied to the other four hospital districts into which Puerto Rico is divided.

The survey group completed its work and issued a preliminary report in September, 1956. A summary of the commission's major findings and recommendations [1] has recently appeared and deserves the attention of anyone concerned with the improvement of health care services. On September 13, 1956, a regional coordinating office was set up in the Health Department to undertake the pilot project in the Bayamón region. Five years have been estimated as the time needed to regionalize this area. The Bayamón experiment is already in operation. In many parts of the United States activities are under way today to improve health care services through better coordination and the Puerto Rican experience will undoubtedly be followed with great interest.

1. Operation Regionalization in Puerto Rico. A Plan for Improving the Medical, Health Care, and Welfare Services Through Regional Coordination. San Juan, Commonwealth of Puerto Rico: Department of Health, 1957.

ASSOCIATION NEWS

EIGHTY-SIXTH ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
ST. LOUIS, MO.—OCTOBER 27–31, 1958

Proposed Changes—Third Edition

Recommended Procedures for the Bacteriological Examination of Shellfish

The Subcommittee on Laboratory Examination of Shellfish, Coordinating Committee on Laboratory Methods, American Public Health Association, has completed a final review draft of the Recommended Procedures for the Bacteriological Examination of Shellfish and Shellfish Waters. On acceptance by the subcommittee the procedures will be submitted to the Coordinating Committee on Laboratory Methods. It is anticipated that the document will be considered by that committee and referred to the Committee on Evaluation and Standards for approval. The Committee on Evaluation and Standards in turn may decide to recommend to the Governing Council that the report be adopted as an official Association report. The following changes are published for the information of the membership with the request that any comments concerning the procedures be transmitted promptly to the Association office for the information of members of the Governing Council.

The format of the procedures has been changed considerably from that of the previous edition. They now appear in three parts: Part 1 contains methods for routine bacteriological examination of shellfish and shellfish waters. Part 2 contains supplementary bacteriological methods, some of which are new tentative procedures and others abstracts of methods as they appear in "Standard Methods for the Examination of Water, Sewage, and Industrial Wastes," Tenth Edition. Part 3 contains formulas for culture media and solutions in common use in the examination of shellfish and shellfish waters, and tables of Most Probable Numbers for three, four, and five tubes in each of three dilutions in geometric series.

Changes in procedures include:

Part 1—Routine Bacteriological Methods of Examination

1. Culture Media

The proposed revision allows the alternate use of lactose broth and lauryl sulfate lactose broth as the presumptive test medium. The procedures also allow the alternate use of tryptone glucose extract agar and either of the two agar media prescribed for the Standard Plate Count of Milk in "Standard Methods for the Examination of Dairy Products," Tenth Edition (1953).

2. Confirmed Test

Details are given concerning the selection of presumptive tubes to be submitted to the confirmed test for coliform organisms.

3. Sampling and Preparation of Sample

The section on examination of shellfish has been elaborated to include detailed instructions for sampling and for the preparation, including shucking, of all the commercially important species of shellfish harvested on both the West and East Coasts.

4. Dilution of Sample

The method of dilution of the original sample has been changed from volumetric to gravimetric and the dilution water has been changed to phosphate buffered dilution water.

Part 2—Supplementary Bacteriological Methods

1. Differentiation of Coliform Organisms

A section on differentiation of coliform organisms is included. This section is in the same general form as the similar section in the American Public Health Association "Standard Methods for the Examination of Water, Sewage and Industrial Wastes," Tenth Edition, but in addition to the classification by IMViC reaction, there has been included a test for growth and production of gas in E.C. medium incubated at 44.5°C in a water bath. The table of classification of coliform types recognizes "irregular" types, many of which are separated by their ability to produce gas in E.C. medium at the elevated temperature.

2. E. coli Density

Part 2 also contains a tentative method for the estimation of the density of E. coli in shellfish waters and shellfish by a partially confirmed procedure which utilizes E.C. medium incubated in a water bath at 44.5° C. E. coli is demonstrated by a completed-IMViC test performed on the gas-positive E.C. tubes.

3. Membrane Filter Procedure

A third section describes a tentative method for the estimation of coliform density of sea water by a membrane filter procedure. This section contains detailed instructions for the performance of the test and the computing and recording of estimates of coliform density.

CORNELIUS B. KELLY, Chairman,
Subcommittee on Laboratory
Examination of Shellfish

Annual Meeting Employment Service

An employment center will be located in the Municipal Auditorium at the 86th Annual Meeting in St. Louis. The exact location will be given in the official program and indicated by directional signs in the auditorium. The Missouri State Employment Service is cooperating with the Vocational Counseling and Placement Service of the Association to provide this feature. Professional counselors will have binders containing the records of vacancies and of personnel available which will be made available to persons registered at the center. A room will be designated for the use of employers and prospective employees for conferences. Vocational counseling will also be available.

Filing of records beforehand will facilitate action at the meeting. Any employer or employee who will want to have his needs listed at the Annual Meeting should register with his local state employment service office. Each state employment office will forward records to the Missouri office for use at the Annual Meeting. It will also be possible to initiate action at the Annual Meeting.

Necessary forms can be obtained from the local offices of any state employment service or from the Vocational Counseling and Placement Service of the Association.

The usual services of the Association continue. 1790 Broadway, New York 19, N. Y.

Preliminary Program of the Scientific Sessions

86th Annual Meeting

American Public Health Association

and

Meetings of Related Organizations

St. Louis, Mo.

October 27–31, 1958

The Kiel Auditorium is headquarters for the meeting and all scientific sessions will be held there, unless otherwise noted.

The 86th Annual Meeting officially opens on Monday morning at 10:15 with Part I of the Association Symposium. This general assembly for all delegates will take place in the Opera House, Kiel Auditorium. The subject is "The Politics of Public Health." The first APHA Section meetings are scheduled for Monday afternoon and continue through Friday morning.

Related organizations will meet on Monday evening, Wednesday afternoon and evening, Thursday morning, and Friday afternoon. Some will meet on Sunday as indicated in the following pages.

Part II of the Association Symposium will bring the 86th Annual Meeting to a close on Friday morning.

The Registration Desk, in the 14th Street lobby, Kiel Auditorium, will open at 9:00 a.m. on Monday, at which time final programs will be available. Everyone is expected to register. The registration fee is $6.00 with nonprofessional wives and husbands exempt.

Sunday

AMERICAN LABOR HEALTH ASSOCIATION

2:00 P.M.—Daniel Boone Room, Statler Hotel

Presiding: Morris A. Brand, M.D., President.

Business Session.

Election of Officers and Executive Committee Members.

AMERICAN SCHOOL HEALTH ASSOCIATION

7:30 P.M.—Missouri Room, Statler Hotel

Presiding: Ruth H. Weaver, M.D., President.

Keynote Speaker. Fred V. Hein, Ph.D.

Report of Study Committees. H. Frederick Kilander, Ph.D.

ASSOCIATION OF TEACHERS OF PREVENTIVE MEDICINE

8:30 A.M.—Crystal Room, Sheraton-Jefferson Hotel

Registration.

PREVENTION AND CONTROL OF CHRONIC DISEASE

Prevention and Control of Cardiovascular Disease. Robert E. Olson, M.D.

Prevention and Control of Mental Disorders. Benjamin Pasamanick, M.D.

Prevention and Control of Cancer. Abraham M. Lilienfeld, M.D.

Intermission.

Control of Radiation Hazards. John C. S. Paterson, M.B.

Present Status of Multiple Screening Programs and Periodic Health Examinations. Lester Breslow, M.D.

12:30–2:00 P.M. Luncheon Recess

2:30 P.M. East Room and Private Dining Rooms, 2, 3, 7, and 8, Sheraton-Jefferson Hotel

Round-Table Discussions of Prevention and Control of Chronic Disease—Existing Programs and Their Use in Teaching

1. **Prevention and Control of Cardiovascular Disease.**
2. **Prevention and Control of Mental Illness.**
3. **Prevention and Control of Cancer.**

(Cont.)

Sunday

ASSOCIATION OF TEACHERS OF PREVENTIVE MEDICINE—(Cont.)

4. Control of Radiation Hazards.
5. Multiple Screening and Periodic Health Examinations.

Preferences indicating first, second, and third choices for afternoon discussion sessions should be sent in advance to: John P. Fox, M.D., Tulane University School of Medicine, 1430 Tulane Avenue, New Orleans 12, La.

6:30 P.M.—Gold Room, Sheraton-Jefferson Hotel

Dinner and Evening Session.

(Speaker to be announced.)

CONFERENCE OF STATE AND PROVINCIAL PUBLIC HEALTH LABORATORY DIRECTORS

9:30 A.M.—Missouri Room, Statler Hotel

Presiding: Ben E. Diamond.

The Changing Patterns of Public Health Laboratory Services. Edmund K. Kline, Dr.P.H.

Discussant: Elmer L. Shaffer, Ph.D.

Relationships Between the Hospital and Private Laboratories and the State Laboratory. Cleon J. Gentzkow, M.D.

The Regional Public Health Laboratory Program in Texas. J. V. Irons, Sc.D., and Joseph N. Murphy, M.S.P.H.

The Role of the Public Health Laboratory in Environmental Programs of the Future. Harry G. Hanson.

The Problem of Atypical Acid-Fast Cultures in Tuberculosis Bacteriology. C. Edwin Smith.

2:30 P.M.—Missouri Room, Statler Hotel

The Field of Virology in Relation to Public Health. Werner Henle, M.D.

New Respiratory Viruses and Their Relation to Public Health. Robert J. Huebner, M.D., and Robert M. Chanock, M.D.

Sero-Interpretation of Results and Application—Panel Discussion

Moderator: W. C. Simpson, M.D.

Participants:
Warfield Garson, M.D.
Ad Harris.
Eleanor V. Price.

CONFERENCE OF STATE DIRECTORS OF PUBLIC HEALTH TRAINING

2:30 P.M. and 8:00 P.M.—Private Dining Room 1, Sheraton-Jefferson Hotel

Sunday

GOVERNING COUNCIL, AMERICAN PUBLIC HEALTH ASSOCIATION

4:00 P.M.—Ivory Room, Sheraton-Jefferson Hotel

Open Meeting—All Members of the Association Are Welcome

6:30 P.M.—Crystal Room, Sheraton-Jefferson Hotel

Dinner and Evening Session for Governing Council Members

MENTAL HEALTH NURSE CONSULTANTS CONFERENCE GROUP

9:00 A.M.-4:30 P.M.—St. Charles Room, Statler Hotel

SOCIETY OF PUBLIC HEALTH EDUCATORS

9:30 A.M.—Statler Hotel

Workshop Sessions.

Washington Room
Los Angeles Room
New York Room
Buffalo Room
Boston Room
Cleveland Room
St. Louis Room

12:30 P.M.—Luncheon Session, Foyer 3, Statler Hotel

2:30 P.M.—St. Louis Room, Statler Hotel

7:00 P.M.—Annual Banquet, Foyer 3, Statler Hotel

Monday, 10:15 A.M.

ASSOCIATION SYMPOSIUM

Opera House, Kiel Auditorium

THE POLITICS OF PUBLIC HEALTH

Two outstanding speakers and a reactor panel discuss the way things get done in a community, both through organized political action in government and through other means of mobilizing community forces to improve health and services to the people.

One speaker will be a political statesman who has faced community problems and achieved substantial solution of many of them; the other, a political scientist, who will describe social factors and elements that determine the success of efforts to secure community action.

The panel will represent various community agencies and leadership. It will attempt to apply to public health problems the material presented by the two speakers.

Monday, 2:30 P.M.

CONFERENCE OF STATE AND PROVINCIAL HEALTH AUTHORITIES OF NORTH AMERICA

Los Angeles Room, Statler Hotel

HEALTH DEPARTMENT LEGISLATIVE—ADMINISTRATIVE RELATIONSHIPS IN THE UNITED STATES AND CANADA: LEGAL BASIS, PHILOSOPHY, TRADITION, AND OPERATION

DENTAL HEALTH SECTION

Committee Room 3D, Kiel Auditorium

Presiding: Linwood G. Grace, D.D.S., Chairman.

THE SECTION'S PROGRAM OF ACTION

Committee Reports.

Section Affairs—General Discussion.

Election of Officers.

ENGINEERING AND SANITATION AND FOOD AND NUTRITION SECTIONS, AND THE CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS

Assembly Hall 2, Kiel Auditorium

Presiding: Mark D. Hollis, C.E.

NEW ASPECTS OF FOOD AND MILK TECHNOLOGY
Audience Participation Invited

Preservation of Foods by Irradiation. Harry E. Goresline, Ph.D., and Norman W. Desrosier, Ph.D.

Discussion: Viewpoint of Industry. L. E. Clifcorn, Ph.D.

Occurrence of Strontium-90, Iodine-131, and Other Radionuclides in Milk. Keith H. Lewis, Ph.D.; J. E. Campbell, Ph.D.; G. K. Murthy, Ph.D.; A. S. Goldin, Ph.D.; and Conrad P. Straub, Ph.D.

Vending Machine Sanitation. David E. Hartley.

Discussants:
Harold S. Adams.
Tom S. Gable, M.P.H.
Samuel H. Hopper, Ph.D.

Monday, 2:30 P.M.

EPIDEMIOLOGY AND MENTAL HEALTH SECTIONS

Committee Room 3C, Kiel Auditorium

Presiding: Theodore H. Ingalls, M.D.

EPIDEMIOLOGIC APPROACHES TO THE STUDY OF PREGNANCY WASTAGE

Prenatal Human Ecology. Theodore H. Ingalls, M.D.

The Effect of Prematurity on Health and Growth. Hilda Knobloch, M.D.; Benjamin Pasamanick, M.D.; Paul A. Harper, M.D.; and Rowland V. Rider, Sc.D.

Maternal Prediabetes and Outcome of Pregnancy. Hugh L. C. Wilkerson, M.D.

A Collaborative Study in Cerebral Palsy and Other Neurological and Sensory Disorders of Infancy and Childhood. Richard L. Masland, M.D.

Some Methodological Problems in Testing Genetic Hypotheses in Human Disease. Abraham M. Lilienfeld, M.D.

4:30 P.M. Mental Health Section Business Session.

HEALTH OFFICERS SECTION

Assembly Hall 4, Kiel Auditorium

Presiding: Emil E. Palmquist, M.D., Chairman.

Newer Methods of Evaluating Sanitation Programs—Panel Discussion

Participants:

Dwight F. Metzler, C.E.
William J. Peeples, M.D.
William Truitt Ingram, M.P.H.

Two Decades of Planned Parenthood in North Carolina. J. W. R. Norton, M.D.; James F. Donnelly, M.D.; and Anne Lamb, R.N.

Public Health as Viewed by the Medical Student and the Medical School Faculty. Robert E. Coker, Jr., M.D.; Kurt W. Back, Ph.D.; Thomas Donnelly, Ph.D.; and Bernard Phillips, Ph.D.

A New Multiple Antigen for Immunization Against Poliomyelitis, Diphtheria, Pertussis, and Tetanus. Response of Infants and Young Children to Primary Immunization, and Fifteen-Month Booster. C. Dale Barrett, Jr., M.D., and Eugene A. Timm, Ph.D.

Progress Report on Refresher Courses for Health Officers. William P. Richardson, M.D.

Section Business and Election of Officers.

Monday, 2:30 P.M.

LABORATORY SECTION

Committee Room 4C, Kiel Auditorium

Presiding: Howard L. Bodily, Ph.D., Chairman.

Section Studies in Progress:

Present-Day Aspects of Laboratory Safety. S. Edward Sulkin, Ph.D.

Current Concepts for Developing Standardized Reagents. Erwin Neter, M.D.

Evaluation of Performance in a Public Health Laboratory. Nell F. Hollinger, Ph.D.

Recent Advances in the Methods of Measuring the Sanitary Quality of Utensils. F. Wellington Gilcreas.

Studies of Program Development:

Current Trends in Public Health Research. George D. Cummings, M.D.

The Role of the Public Health Laboratory in the Recruitment and Training of Laboratory Personnel. J. V. Irons, Sc.D.

Developing Effective Relationships with Other Societies and Agencies. Morris Scherago, D.V.M.

Modern Concepts of the Scope of Activities of the Laboratory Section. Ralph S. Muckenfuss, M.D., and Daniel Widelock, Ph.D.

Section and APHA Affairs:

Problems Involved in the Recruitment of Members and Fellows in the Laboratory Section. Morris F. Shaffer, D.Phil.

Requirements for Developing an Effective Program for the Laboratory Section. Albert V. Hardy, M.D.

Report of the Nominating Committee. Grace Eldering.

MATERNAL AND CHILD HEALTH AND PUBLIC HEALTH NURSING SECTIONS

Assembly Hall 1, Kiel Auditorium

ROLE OF HEALTH AND WELFARE SERVICE IN MEETING NEEDS OF MOTHERS AND CHILDREN

Speakers:

Katherine B. Oettinger.
Edward R. Schlesinger, M.D.

Panel Discussion.

Moderator: William M. Schmidt, M.D.

Participants:

Marion Ascoli.
Jessie M. Bierman, M.D.
Florence Blake, R.N.
Edward Davens, M.D.
Margaret A. Losty, R.N.
Winford Oliphant.

Monday, 2:30 P.M.

MEDICAL CARE SECTION

Committee Room 4B, Kiel Auditorium

Presiding: Lucille M. Smith, Chairman.

The Old-Age and Survivors Disability Insurance Program: What Disability Means to People. Arthur E. Hess.

Discussants:

Pearl Bierman.
Jean S. Felton, M.D.

Business Session.

OCCUPATIONAL HEALTH SECTION

Committee Room 3A, Kiel Auditorium

Business Session.

PUBLIC HEALTH EDUCATION SECTION

Assembly Hall 3, Kiel Auditorium

Presiding: Ralph H. Boatman, Ph.D., Chairman.

WHAT IS HAPPENING TO THE HEALTH IN HEALTH EDUCATION—
A Symposium
Audience Participation Invited

Moderator: Ralph H. Boatman, Ph.D.

Medicine and Public Health Administration. Edward G. McGavran, M.D.
Public Health Nursing. Marion I. Murphy, R.N.
Sanitation and Engineering. M. Allen Pond, M.P.H.
Health Education. Louise E. Haas, M.P.H.

Panel Discussion.

Moderator: Theron H. Butterworth, Ph.D.

Participants:

Louise E. Haas, M.P.H.
Edward G. McGavran, M.D.
Marion I. Murphy, R.N.
M. Allen Pond, M.P.H.

Monday, 2:30 P.M.

SCHOOL HEALTH SECTION

Committee Room C, Kiel Auditorium

Presiding: Elena M. Sliepcevich, D.P.E., Chairman.

Section Business and Election of Officers.

Committee Reports

Section Secretary. Florence L. Fogle, R.N.

Membership Committee. Marjorie L. Craig.

Editorial Committee. Patricia J. Hill, M.P.H.

Nominating Committee. Edward B. Johns, Ed.D.

EVALUATIVE STUDIES IN SCHOOL HEALTH

School Health Education Evaluative Study, Los Angeles Area. Edward B. Johns, Ed.D.

Brookline, Massachusetts, School Health Project. Marjorie A. C. Young, Dr.P.H.

School Health Survey, New York City. Irving Ladimer, J.D., and William C. Spring, Jr., M.D.

STATISTICS SECTION AND THE AMERICAN ASSOCIATION FOR VITAL RECORDS AND PUBLIC HEALTH STATISTICS

Committee Room 3B, Kiel Auditorium

Presiding: Bernard G. Greenberg, Ph.D., and Albert E. Bailey, Ph.D.

THE STATISTICS SECTION—FIFTIETH ANNIVERSARY

Report of Nominating Committee.

Remarks. Berwyn F. Mattison, M.D.

Figures, Fancies, and Fancy Figures. Hugo Muench, Jr., M.D.

Origins and Future of Vital Records. Arthur W. Hedrich, Sc.D.

Vital Statistics—Their Past and Future. Carl L. Erhardt.

Monday, 5:30 P.M.

*CONFERENCE OF STATE AND PROVINCIAL HEALTH AUTHORITIES OF NORTH AMERICA

Social Hour, Followed by Dinner and Evening Session at 6:30 P.M., St. Louis Room, Statler Hotel

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* Tickets will be on sale at the registration desk.

Monday, 5:30 P.M.

RECEPTION TO THE PRESIDENT OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

5:30–6:45 P.M., Gold Room, Sheraton-Jefferson Hotel

All Registered Delegates and Exhibitors Are Invited

Monday, 6:30 P.M.

* COMMITTEE ON MEDICAL CARE TEACHING OF THE ASSOCIATION OF TEACHERS OF PREVENTIVE MEDICINE

Dinner and Evening Session—Private Dining Room 1, Sheraton-Jefferson Hotel

MEDICAL CARE TEACHING IN SCHOOLS OF HOSPITAL ADMINISTRATION—Panel Discussion

* CONFERENCE OF STATE AND PROVINCIAL PUBLIC HEALTH LABORATORY DIRECTORS

Dinner and Evening Session—Missouri Room, Statler Hotel

Old Uses for New Glass. Kimble Glass Company.

Report of the Committee on the Kimble Methodology Award.

Presentation of the Kimble Award. Francis C. Lawler, Sc.D.

* ENGINEERING AND SANITATION SECTION, THE CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS, AND THE CONFERENCE OF STATE SANITARY ENGINEERS

Annual Stag Dinner, Preceded by Social Hour at 5:30 P.M., Ivory Room, Sheraton-Jefferson Hotel

Master of Ceremonies: Clarence W. Klassen, P.E.

* MILITARY GOVERNMENT-CIVIL AFFAIRS PUBLIC HEALTH SOCIETY

Dinner and Evening Session—St. Charles Room, Statler Hotel

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* Tickets will be on sale at the registration desk.

Monday, 8:00 P.M.

AMERICAN NATIONAL COUNCIL FOR HEALTH EDUCATION OF THE PUBLIC AND THE INTERNATIONAL UNION FOR HEALTH EDUCATION OF THE PUBLIC

Crystal Room, Sheraton-Jefferson Hotel

GETTING READY FOR TWO WORLD HEALTH EDUCATION CONFERENCES—1959

AMERICAN SCHOOL HEALTH ASSOCIATION

Grand Ballroom, Statler Hotel

Presiding: Fred V. Hein, Ph.D.

Report of the President. Ruth H. Weaver, M.D.

Report of the Secretary. A. O. DeWeese, M.D.

Election of Officers.

RESEARCH IN SCHOOL HEALTH

Children's Dental Health Programs—An Appraisal. J. M. Wisan, D.D.S.

A Motivational Study of Dental Care. B. Duane Moon.

ASSOCIATION OF SCHOOLS OF PUBLIC HEALTH

Foyer 3, Statler Hotel

ASSOCIATION OF STATE MATERNAL AND CHILD HEALTH AND CRIPPLED CHILDREN'S DIRECTORS

Daniel Boone Room, Statler Hotel

Monday, 9:00 P.M.

GET-ACQUAINTED PARTY AND DANCE

Gold Room, Sheraton-Jefferson Hotel

The Missouri Public Health Association cordially invites all delegates and exhibitors to an evening of fun and dancing. Music by Jackie Field's orchestra. Dress informal.

Monday, 9:00 P.M.

*MENTAL HEALTH SECTION

Social Hour—Dallas Room, Los Angeles Room, Washington Room, Statler Hotel

Tuesday, 8:00 A.M.

*ASSOCIATION OF THE ALUMNI OF THE COLUMBIA UNIVERSITY SCHOOL OF PUBLIC HEALTH

Breakfast Session—Daniel Boone Room, Statler Hotel

NATIONAL ADVISORY COUNCIL, CLEVELAND HEALTH MUSEUM

Breakfast Session—Private Dining Room 8, Sheraton-Jefferson Hotel

*TULANE UNIVERSITY ALUMNI

Breakfast Session—Dallas Room, Statler Hotel

Tuesday, 9:45 A.M.

DENTAL HEALTH SECTION

Committee Room 3B, Kiel Auditorium

Presiding: Linwood G. Grace, D.D.S., Chairman.

THE GROUP PURCHASE OF DENTAL CARE—Panel Discussion

Moderator: Walter J. Pelton, D.D.S.

What Do Unions Want? Goldie Krantz, M.P.H.

What Do Cooperative Groups Want? Jerry Voorhis, LL.D.

What Do Welfare Agencies Want? Azile Aaron.

What Does Industry Want? (Speaker to be announced.)

What Does the Dental Society Want? (Speaker to be announced.)

What Is the Role of Private Insurance Companies? J. F. Follmann, Jr.

What Is the Role of Dentists in Group Practice? (Speaker to be announced.)

What Is the Role of a Health Agency? Arthur Bushel, D.D.S.

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* Tickets will be on sale at the registration desk.

Tuesday, 9:45 A.M.

ENGINEERING AND SANITATION SECTION

Assembly Hall 3, Kiel Auditorium

Presiding: Mark D. Hollis, C.E., Chairman.

ARE YOU GETTING THE MOST ENVIRONMENTAL HEALTH SERVICE OUT OF THE TAX DOLLAR?

Audience Participation Invited

Viewpoint of the Public Administrator. Donald F. Simpson.

Meeting the Problems:

Generalized and Specialized Staff Operations. Herbert J. Dunsmore, P.E.

Evaluation. P. W. Purdom, P.E.; Morris Shiffman, D.V.M.; and F. Herbert Colwell, Dr.P.H.

Self-Inspection. Kelly G. Vester, and J. W. R. Norton, M.D.

Fee for Service Plan. Charles L. Senn, P.E.

Report of Section Committee on Emergency Sanitation Practices. William H. Cary, Jr., P.E.

EPIDEMIOLOGY AND LABORATORY SECTIONS, AND THE CONFERENCE OF PUBLIC HEALTH VETERINARIANS

Assembly Hall 1, Kiel Auditorium

VIROLOGY AND VIRUS DISEASES

The Polyoma Virus:

Tumor Induction, Inhibition of Tumors by Specific Neutralizing Antibodies and Characterization of the Virus. Sarah E. Stewart, M.D., and Bernice E. Eddy, Ph.D.

Epizootiology of Polyoma Virus in Mouse Colonies. Robert J. Huebner, M.D.; Wallace Rowe, M.D.; and Janet Hartley, Ph.D.

Viral Agents of Avian Leukosis. Ben R. Burmester, D.V.M.

Epidemiologic Studies as an Aid to Clinical Definition of Virus Disease of the Central Nervous System. Michael L. Furcolow, M.D., and Tom D. Y. Chin, M.D.

Newer Aspects of the Acute Respiratory Disease Problem. Harold S. Ginsberg, M.D.

Tuesday, 9:45 A.M.

FOOD AND NUTRITION, HEALTH OFFICERS, MEDICAL CARE, AND PUBLIC HEALTH NURSING SECTIONS

Assembly Hall 4, Kiel Auditorium

Presiding: Jonas N. Muller, M.D.

SOME NEW DEVELOPMENTS IN REHABILITATION—THE SPECIAL ROLE OF THE HEALTH DEPARTMENT

Community Aspects of Mental Subnormality: A Local Health Department Program for Retarded Children. Edward Wellin, Ph.D.; Leon Sternfeld, M.D.; Alison B. Scott, M.B.; Gertrude C. Johnson, R.N.; Joanne Marks; Monte Bliss; Simone J. Goldstein; and Elizabeth K. Caso.

Job Training Program for Mentally Retarded Adults: Two-Year Report on a Combined Agency Project in Hartford. Alice Moore and Alfred L. Burgdorf, M.D.

The Education of Nursing Home Personnel for Rehabilitation: A Three-Year Action Research Project in Illinois. H. Worley Kendall, M.D., and John A. Hackley.

The Application of Epidemiologic Methods to the Study of Alcoholism and Its Treatment: A Special Responsibility of Public Health. Wendell R. Lipscomb, M.D., and Lester Breslow, M.D.

LABORATORY SECTION

Committee Room 3A, Kiel Auditorium

Presiding: F. Wellington Gilcreas.

Sampling Technics in Air Pollution Investigations. E. R. Hendrickson, Ph.D.

Comparative Study of Media for Detection of Enterococci in Water. Charles C. Croft, Sc.D.

Indicator Organisms in the Evaluation of Water Pollution. J. B. Lackey, Ph.D.

Planning of Sampling Programs in Environmental Sanitation. Joseph A. McCarthy.

Evaluation of Methods for Determining Microbial Contamination on Surfaces. William G. Walter and Robert Angelotti.

Comparative Methods for the Detection of Coli Form Organisms in Contaminated Water. Walter L. Mallmann, Ph.D.

MATERNAL AND CHILD HEALTH AND STATISTICS SECTIONS

Committee Room 4C, Kiel Auditorium

Presiding: Helen M. Wallace, M.D.

USE OF STATISTICS IN PROGRAM DEVELOPMENT

Characteristics of Families Served by Homemakers. Maryland Y. Pennell and Lucille M. Smith.

(Cont.)

Tuesday, 9:45 A.M.

MATERNAL AND CHILD HEALTH AND STATISTICS SECTIONS —(Cont.)

Some Aspects of Child Health and Services Seen Through the National Health Survey. Marian M. Crane, M.D., and Eleanor P. Hunt, Ph.D.

Survivorship in Cerebral Palsy. Edward R. Schlesinger, M.D.; Norman C. Allaway; and Seymour Peltin.

Potentialities and Limitations of Medical Information on the Birth Certificate. Samuel Schwartz, M.D., and Howard West, M.P.H.

MENTAL HEALTH SECTION

Committee Room 3C, Kiel Auditorium

Presiding: Ruth E. Simonson, R.N.

Public Health Practices in Mental Hospitals. John D. Porterfield, M.D.

Discussant: Berwyn F. Mattison, M.D.

The Psychosocial Development of Aggressive Behavior in Children. Leonard D. Eron, Ph.D.; Jerome H. Laulicht, Ph.D.; Leopold O. Walder, Ph.D.; and Frank Hladky, Jr., M.D.

Discussant: Mary A. Monk, Ph.D.

Sources of Infection Revealed in Preventive Psychiatry Research. Ralph H. Ojemann, Ph.D.

Discussant: Benjamin Pasamanick, M.D.

OCCUPATIONAL HEALTH SECTION, THE AMERICAN INDUSTRIAL HYGIENE ASSOCIATION, AND THE INDUSTRIAL MEDICAL ASSOCIATION

Committee Room C, Kiel Auditorium

MAN AT WORK—SOME OF THE PROBLEMS FACING US—1958

Presiding: Robert A. Kehoe, M.D.

An Advancing Technology and Its Impact on Human Beings. (Speaker to be announced.)

Significance to Health of Advances in Electronics. George M. Knauf, M.D.

Agricultural Industry—The Changing Pattern. Clyde M. Berry, Ph.D.

New Materials in Design and Decoration. (Speaker to be announced.)

Tuesday, 9:45 A.M.

PUBLIC HEALTH EDUCATION AND SCHOOL HEALTH SECTIONS, AND THE AMERICAN SCHOOL HEALTH ASSOCIATION

Assembly Hall 2, Kiel Auditorium

Presiding: John H. Shaw, Ed.D.

HEALTH EDUCATION AND THE SPACE AGE

The Space Age Needs the Life Sciences. Chauncey D. Leake, M.D.

An Appraisal of Health Education in the Space Age. Delbert Oberteuffer, Ph.D.

Reactors:

Morey R. Fields, Ed.D.
Thomas B. Southard, Ph.D.

Tuesday, 12:30 P.M.

* DENTAL HEALTH SECTION

Luncheon Session—Private Dining Room 9, Sheraton-Jefferson Hotel

Presiding: Linwood G. Grace, D.D.S., Chairman.

DENTAL PROGRAMS IN OTHER LANDS—Panel Discussion

Participants:

John C. Greene, D.M.D.
John W. Knutson, D.D.S.
Frank C. McCombie, L.D.S.
Carl L. Sebelius, D.D.S.

* ENGINEERING AND SANITATION SECTION

Luncheon Session—Foyers 2 and 3, Statler Hotel

Presiding: Mark D. Hollis, C.E., Chairman.

Business Session and Election of Officers.

* FOOD AND NUTRITION SECTION

Luncheon Session—Private Dining Room 1, Sheraton-Jefferson Hotel

Presiding: Fred C. Baselt, C.E., Chairman.

Business Session.

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* Tickets will be on sale at the registration desk.

Tuesday, 12:30 P.M.

* MEDICAL CARE SECTION

Luncheon Session—Ivory Room, Sheraton-Jefferson Hotel

Presiding: Ray E. Trussell, M.D.

The Insurance Commission and State Government Look at Group Payment. Edward L. Springer, LL.B.

* OCCUPATIONAL HEALTH SECTION

Luncheon Session—Private Dining Room 8, Sheraton-Jefferson Hotel

Business Session.

* PUBLIC HEALTH EDUCATION SECTION

Luncheon Session—Crystal Room, Sheraton-Jefferson Hotel

Presiding: Ralph H. Boatman, Ph.D., Chairman.

The Difference Is Health Education. Hugh R. Leavell, Dr.P.H.

* SCHOOL HEALTH SECTION

Luncheon Session—Dallas Room, Los Angeles Room, Washington Room, Statler Hotel

Presiding: Elena M. Sliepcevich, D.P.E., Chairman.

(Speaker to be announced.)

Tuesday, 2:30 P.M.

COMMITTEE ON RESOLUTIONS, AMERICAN PUBLIC HEALTH ASSOCIATION

Private Dining Room 6, Sheraton-Jefferson Hotel

PUBLIC READING OF ALL RESOLUTIONS RECEIVED, BEFORE PRESENTATION TO THE GOVERNING COUNCIL

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* Tickets will be on sale at the registration desk.

Tuesday, 2:30 P.M.

DENTAL HEALTH AND MATERNAL AND CHILD HEALTH SECTIONS

Committee Room C, Kiel Auditorium

Presiding: Linwood G. Grace, D.D.S.

DEVELOPMENTS IN THE TREATMENT OF ORAL CLEFTS

The How and the Why of the Cleft Palate Team—An Historical Review. Herbert R. Kobes, M.D.

Unoperated Oral Clefts at Maturation. John T. Fulton, D.D.S.

The Use of Prosthetic Appliances to Improve Speech in Young Unoperated Cleft Palate Cases. Eugene T. McDonald, Ph.D.

Cinefluorography—A New Tool for the Cleft Palate Team. Herbert K. Cooper, D.D.S.

ENGINEERING AND SANITATION AND MENTAL HEALTH SECTIONS, AND THE CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS

Committee Room 4B, Kiel Auditorium

Presiding: Mark D. Hollis, C.E.

NEEDS, PROGRAMS, AND STUDIES IN HOUSING—A Symposium
Audience Participation Invited

Impact of Urban Sprawl on Housing and Community Development. Coleman Woodbury, Ph.D.

Implications for Urban Renewal Programs—Reaction Panel

Moderator: Eric W. Mood, P.E.

Participants:
Leonard J. Czarniecki, P.E.
Spencer D. Parratt.
W. H. Sindt, P.E.
James A. Singer, J.D.
Coleman Woodbury, Ph.D.

Housing as an Environmental Factor in Mental Health: The Johns Hopkins Longitudinal Study. Daniel M. Wilner, Ph.D.; Rosabelle Price Walkley; John M. Schram; and Matthew Tayback, Sc.D.

4:30 P.M. Mental Health Section Business Session.

Tuesday, 2:30 P.M.

EPIDEMIOLOGY, HEALTH OFFICERS, AND STATISTICS SECTIONS

Assembly Hall 2, Kiel Auditorium

Presiding: Emil E. Palmquist, M.D.

RESEARCH IN AND BY LOCAL HEALTH DEPARTMENTS
Audience Participation Invited

Moderator: George James, M.D.

The Public Health Service Program to Promote Local Health Department Research: The General Program—Aims, Operations, and Accomplishments. William F. Mayes, M.D.

A Report on Research on Public Health Needs and Practices in a Great Plains County. Donald Harting, M.D.

The California State Program to Promote Local Health Department Research: The General Program—Aims, Operations, and Accomplishments. Robert Dyar, M.D.

Investigation to Design and Evaluate a Vision Screening Program for Elementary School Children. Henrik L. Blum, M.D.

The Washington County (Md.) Program to Promote Local Health Department Research—The General Program: Aims, Operations, and Accomplishments. W. Ross Cameron, M.D.

The Geographic Distribution of Cancer Within a Single County as Related to Environmental Factors. Pope A. Lawrence.

FOOD AND NUTRITION SECTION

Committee Room 3A, Kiel Auditorium

Presiding: Fred C. Baselt, C.E., Chairman.

THE USES OF THE NEWLY REVISED NATIONAL FOOD STANDARD—RECOMMENDED DIETARY ALLOWANCES

The 1958 Revision of Recommended Dietary Allowances. Robert E. Shank, M.D.

The Use of Recommended Dietary Allowances in Assessing the Diets of Individuals and Groups. Esther Phipard, Ph.D.

The Uses of Recommended Dietary Allowances in Planning Diets for Military Groups. Theodore E. Friedemann, Ph.D., and Herman F. Kraybill, Ph.D.

The Uses of Recommended Dietary Allowances by the Food Industry. H. E. O. Heineman and Elspeth Bennett.

4:30 p.m. Screening of new film "The Medicine Man" on food quackery. This film was produced by the AMA in cooperation with the Food and Drug Administration.

Tuesday, 2:30 P.M.

LABORATORY SECTION

Committee Room 3C, Kiel Auditorium

Presiding: Howard L. Bodily, Ph.D., Chairman.

STAPHYLOCOCCAL INFECTIONS

A New Selective and Differential Medium for Staphylococcus aureus. James E. Greer, Ph.D., and Richard R. Menard.

Persistence and Resistance of Staphylococcus. Frank B. Engley, Jr., Ph.D.

Study of a Hospital Epidemic of Staphylococcal Enteritis. Joseph B. Kopp, M.D.; Harry W. Hale, Jr., M.D.; Grace T. Jansen, M.D.; and F. Sicari.

Conquest of Disease Is a Hospital's Primary Concern. Alan T. Treloar, Ph.D.

Discussant: Walter A. Murray, M.D.

MEDICAL CARE SECTION

Committee Room 3B, Kiel Auditorium

Presiding: Leslie A. Falk, M.D.

CONTINUITY AND COORDINATION OF MEDICAL AND HEALTH SERVICES

Coordination in the Coal Miners Medical Care Program—Influence of Assigned Managing Physicians on Repeated Admissions. Allen N. Koplin, M.D.; Richard Hutchison; and Bruce K. Johnson, M.D.

Coordinated Health Services in the Canal Zone: A Case Study and Some Implications for the U.S.A. Isidore S. Falk, Ph.D., and Colonel Charles O. Bruce, MC, USA.

Health Departments and Medical Care: A World Scanning. Milton I. Roemer, M.D.

OCCUPATIONAL HEALTH SECTION, THE AMERICAN INDUSTRIAL HYGIENE ASSOCIATION, AND THE INDUSTRIAL MEDICAL ASSOCIATION

Committee Room 4C, Kiel Auditorium

MAN AT WORK—SOME OF THE PROBLEMS FACING US—1958

Presiding: Robert A. Kehoe, M.D.

Space Flight—The Health Problems Facing Us. (Speaker to be announced.)

New Sources of Power. (Speaker to be announced.)

New Structural Materials. (Speaker to be announced.)

Tuesday, 2:30 P.M.

PUBLIC HEALTH EDUCATION SECTION

Assembly Hall 3, Kiel Auditorium

Presiding: Ralph H. Boatman, Ph.D., Chairman.

WE LOOK AT OUR PROFESSIONAL RESPONSIBILITIES FOR HEALTH EDUCATION—Round-Table Discussion

Moderator: Betty W. Bond, Ph.D.

Participants:

Morey R. Fields, Ed.D., Chairman, Committee on the Task Force.
Hugh R. Leavell, Dr.P.H., Chairman, Committee on Fellowship.
Mabel E. Rugen, Ph.D.
Section Council Members.

Election of Officers.

PUBLIC HEALTH NURSING SECTION

Assembly Hall 1, Kiel Auditorium

Section Business.

SCHOOL HEALTH SECTION AND THE AMERICAN SCHOOL HEALTH ASSOCIATION

Assembly Hall 4, Kiel Auditorium

Presiding: Lyda M. Smiley, R.N.

SEX EDUCATION

Survey of Knowledge of Certain Aspects of the Physiology of Human Reproduction. H. Frederick Kilander, Ph.D.

Personal and Family Life Education in the University City Public Schools. Helen Manley.

About Your Life. Louise McNiff.

STATISTICS SECTION

Committee Room 3D, Kiel Auditorium

Presiding: Bernard G. Greenberg, Ph.D., Chairman.

STATISTICAL TECHNICS IN PUBLIC HEALTH STUDIES

Tuesday, 5:30 P.M.

* NATIONAL TUBERCULOSIS ASSOCIATION

Social Hour, Followed by Dinner at 6:30 P.M., Private Dining Room 1, Sheraton-Jefferson Hotel

* Tickets will be on sale at the registration desk.

Tuesday, 5:30 P.M.

*PUBLIC HEALTH EDUCATION AND SCHOOL HEALTH SECTIONS, AND THE SOCIETY OF PUBLIC HEALTH EDUCATORS

Social Hour, 5:30–7:00 P.M., Missouri Room, Statler Hotel

*UNIVERSITY OF MICHIGAN ALUMNI

Social Hour, 5:30–7:00 P.M., Crystal Room, Sheraton-Jefferson Hotel

*UNIVERSITY OF NORTH CAROLINA SCHOOL OF PUBLIC HEALTH ALUMNI ASSOCIATION

Social Hour, Private Dining Room 9, Sheraton-Jefferson Hotel, Preceded by Business Session at 5:00 P.M. in Private Dining Room 8

Tuesday, 8:30 P.M.

FIRST GENERAL SESSION

Gold Room, Sheraton-Jefferson Hotel

Presiding: Roy J. Morton, C.E., President, American Public Health Association.

Addresses of Welcome:

The Honorable James T. Blair, Jr., Governor of Missouri.

The Honorable Raymond R. Tucker, Mayor of St. Louis.

H. M. Hardwicke, M.D., Director, Missouri Division of Health.

J. Earl Smith, M.D., Health Commissioner, City of St. Louis.

Greetings from the Royal Society of Health. John A. Scott, O.B.E., Q.H.P., F.R.S.H. Chairman of Council, Royal Society of Health, London, England.

Presidential Address. Roy J. Morton, C.E.

Presentation of the Sedgwick Memorial Medal.

Delta Omega Lecture. (Speaker to be announced.)

Wednesday, 8:00 A.M.

*GEORGE PEABODY COLLEGE FOR TEACHERS ALUMNI

Breakfast Session—Daniel Boone Room, Statler Hotel

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* Tickets will be on sale at the registration desk.

Wednesday, 8:00 A.M.

* THE JOHNS HOPKINS UNIVERSITY ALUMNI

Breakfast Session—Missouri Room, Statler Hotel

* UNIVERSITY OF MICHIGAN ALUMNI

Breakfast Session—Crystal Room, Sheraton-Jefferson Hotel

* UNIVERSITY OF TORONTO SCHOOL OF HYGIENE ALUMNI

Breakfast Session—Private Dining Room 7, Sheraton-Jefferson Hotel

Wednesday, 9:45 A.M.

COMMITTEE ON SCIENTIFIC EXHIBITS, APHA

Committee Room C, Kiel Auditorium

CLINIC ON SCIENTIFIC EXHIBITS

Bring your exhibit problems to the clinic. Discuss them with the Committee on Scientific Exhibits and with other resource persons who will attend.

Participants: the Committee on Scientific Exhibits.

Resource Persons: from the profession and from among the technical exhibitors experienced in visual portrayal.

DENTAL HEALTH, MEDICAL CARE, AND PUBLIC HEALTH NURSING SECTIONS

Assembly Hall 1, Kiel Auditorium

Presiding: Margaret C. Klem; Bernardine E. Striegel, R.N.; and Walter J. Pelton, D.D.S.

NEW DEVELOPMENTS IN PREPAYMENT: BRIEF REPORTS ON EXPERIENCES

The Social Workers in a Prepayment Program. Edith S. Alt.

Health Insurance Protection for Migrant Agricultural Workers. Helen L. Johnston.

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* Tickets will be on sale at the registration desk.

Wednesday, 9:45 A.M.

DENTAL HEALTH, MEDICAL CARE, AND PUBLIC HEALTH NURSING SECTIONS—(Cont.)

A State Dental Association Sponsored Corporation. David W. Brock, D.D.S.

Dual Choice of Prepayment Plan. Avram Yedidia.

Care in Nursing Homes Through Prepaid Hospital Plans. Agnes W. Brewster.

Visiting Nurse Service Following Hospitalization for Blue Cross Subscribers. Maria Phaneuf, R.N.

Public Health Nursing Services Under Major Medical Insurance Contracts. Mabel F. Chrystie, R.N.

The Psychiatric Team in a Prepaid Medical Care Program. Louis L. Tureen, M.D.

Insurance Against Drug Costs. W. A. Wilkinson.

ENGINEERING AND SANITATION, HEALTH OFFICERS, AND OCCUPATIONAL HEALTH SECTIONS, THE CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS AND THE CONFERENCE OF STATE SANITARY ENGINEERS

Assembly Hall 3, Kiel Auditorium

Presiding: Mark D. Hollis, C.E.

COPING WITH IONIZING RADIATION AND ATMOSPHERIC POLLUTION

Audience Participation Invited

Functions and Responsibilities of State and Local Agencies for Radiation Protection—A Symposium.

Experiences at the State Level. Daniel Bergsma, M.D.

Experiences at the Local Level. William G. Fredrick, Sc.D.

Reaction Panel:

Moderator: Mitchell R. Zavon, M.D.

Participants:

Daniel Bergsma, M.D.
William G. Fredrick, Sc.D.
Robert G. Gallagher.
Joseph Lieberman, Dr.Eng.
Karl M. Mason, P.E.
Francis I. J. Weber, M.D.

Present Status of Atmospheric Pollution in U.S.A. Arthur C. Stern, M.E.

New Understandings from Current Atmospheric Pollution Research. Moyer D. Thomas, Ph.D.

Wednesday, 9:45 A.M.

EPIDEMIOLOGY AND MATERNAL AND CHILD HEALTH SECTIONS

Committee Room 3B, Kiel Auditorium

Presiding: Theodore H. Ingalls, M.D.

EPIDEMIOLOGIC INVESTIGATION OF EVENTS ASSOCIATED WITH IONIZING RADIATION

Radiation Health Problems as They Relate to Epidemiology. Charles L. Dunham, M.D.

Prenatal X-Irradiation and Childhood Neoplasia. Brian MacMahon, M.D.

The Application of Cohort Analysis to the Study of Ionizing Radiation and Longevity of Physicians. Raymond Seltser, M.D., and Philip E. Sartwell, M.D.

Leukemia in Relation to Occupational and Therapeutic Exposure to Radiation. William C. Moloney, M.D.

Prospective Study of the Genetic Effects of Ionizing Radiation on Man. William J. Schull, Ph.D.

FOOD AND NUTRITION SECTION

Committee Room 4B, Kiel Auditorium

Presiding: Fred C. Baselt, C.E., Chairman.

INTERNATIONAL NUTRITION PROGRAMS AND THE SOLUTION OF WORLD FOOD PROBLEMS

LABORATORY SECTION

Committee Room 4C, Kiel Auditorium

Presiding: Howard L. Bodily, Ph.D., Chairman.

A Simple Screening Test for the Detection of Leptospirosis in Human Beings and Animals. Thelma F. Muraschi.

An Investigation of Possible Wild Animal Hosts of Leptospiras in the Area of the "Fort Bragg Fever" Outbreaks. Mildred M. Galton; Nell Hirschberg, Ph.D.; Robert W. Menges, D.V.M.; Martin P. Hines, D.V.M.; and Robert T. Habermann, D.V.M.

The Minoprio Test and Its Use in the Detection of Brucella Infection. Charles M. Carpenter, M.D.; Dorothy Heilman, M.D.; and Jane Walker.

A Laboratory Analysis of the 1957–1958 Influenza Outbreak in New York City. II. A Sero-Epidemiological Study. Daniel Widelock, Ph.D.; Sarah Klein; Olga Simonovic; and Lenore R. Peizer.

The Effect of Chlorine in Water on Enteric Viruses. II. The Effect of Combined Chlorine on Poliomyelitis and Coxsackie Viruses. Sally Kelly, Ph.D., and Wallace W. Sanderson.

Laboratory Aspects of an Outbreak of St. Louis Encephalitis in the Lower Rio Grande Valley of Texas in 1957. Thelma D. Sullivan; James E. Grimes; and J. V. Irons, Sc.D.

Wednesday, 9:45 A.M.

MATERNAL AND CHILD HEALTH SECTION

Committee Room 3A, Kiel Auditorium

Presiding: Donaldson F. Rawlings, M.D.

Analysis and Effective Use of Professional Staff Time. Harvey L. Shapiro, M.P.H.

Pediatric Participation in an Experiment in Maternal and Child Care. Some Implications for Public Health Programs. Pauline G. Stitt, M.D.; Joan G. Babbott, M.D.; and Eva Salber, M.D.

An Evaluation of Young Adults with Severe Neuromuscular Disorders to Determine Community Needs. William E. Mosher, Jr., M.D.

Pediatric Evaluations of a Sample of Indian Children. Georgia B. Perkins, M.D.

MENTAL HEALTH SECTION AND THE JOINT COMMISSION ON MENTAL ILLNESS AND HEALTH

Committee Room 3D, Kiel Auditorium

TARGETS IN THE CARE OF THE MENTALLY ILL

Part I: The Future of Building Programs for Mental Health—Panel Discussion

Moderator: Elias J. Marsh, M.D.

Keynote Speaker: Stewart T. Ginsberg, M.D.

Participants:

Louis Belison, M.D.
James P. Dixon, Jr., M.D.
Alston G. Gutterson.
Lucy D. Ozarin, M.D.
Mabel Ross, M.D.

Open Discussion.

PUBLIC HEALTH EDUCATION SECTION AND THE ASSOCIATION OF BUSINESS MANAGEMENT IN PUBLIC HEALTH

Assembly Hall 2, Kiel Auditorium

Presiding: Adele S. Hebb.

THE ORGANIZATION MAN: PORTENT OR PROMISE FOR PUBLIC HEALTH?

The Productive Individualist and the Organization. J. Donald Kingsley, M.D.

The Productive Conformist and the Organization. Arthur S. Flemming, LL.D.

Discussion.

Wednesday, 9:45 A.M.

SCHOOL HEALTH SECTION

Assembly Hall 4, Kiel Auditorium

Presiding: John H. Shaw, Ed.D.

Committee Reports:

Hearing Conservation. C. Adele Brown, M.D.
Juvenile Delinquency. Carl L. Anderson, Dr.P.H.
Professional Preparation. H. Frederick Kilander, Ph.D.
Research. Wesley M. Staton, Ed.D.
Resolutions. Fred V. Hein, Ph.D.
Rural School Health Services. Jennelle V. Moorhead.

SPOTLIGHT ON ACTION FOR SCHOOL HEALTH

Health Education Projects in Elementary Schools—Panel Discussion

Introduction. Donald N. Boydston, Ed.D.

Moderator: Frances K. Phillips.

Participants:

Ruth Blackburn.
Ferne Boswell.
Mabel Hanson.
John A. Hinchcliffe.
Troy Nolen.
Martha M. Smith.
Ruth Sutton.

Report of the Inter-Agency Meeting on Health Education—West Point, May 5–7, 1958. (Speaker to be announced.)

STATISTICS SECTION

Committee Room 3C, Kiel Auditorium

Presiding: Bernard G. Greenberg, Ph.D., Chairman.

SOME METHODOLOGICAL ASPECTS OF HOUSEHOLD HEALTH SURVEYS

Motivations Toward Public Health Examinations. Paul N. Bworski and Oswald K. Sagen, Ph.D.

A Validation of Information Provided by Household Respondents in Health Surveys. Philip E. Enterline.

How Good Are Hospitalization Data Obtained from a Household Survey? Barkev S. Sanders, Ph.D.

Business Session and Election of Officers.

Wednesday, 12:30 P.M.

* CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS

Luncheon Session—Crystal Room, Sheraton-Jefferson Hotel

Presiding: H. Clifford Mitchell.

Business Session.

* Tickets will be on sale at the registration desk.

Wednesday, 12:30 P.M.

* CONFERENCE OF STATE SANITARY ENGINEERS

Luncheon Session—Private Dining Room 9, Sheraton-Jefferson Hotel

* EPIDEMIOLOGY SECTION

Luncheon Session—Private Dining Room 1, Sheraton-Jefferson Hotel

Presiding: Theodore H. Ingalls, M.D., Chairman.

Report of Section Chairman.

Report of Section Committees:
Teaching of Preventive Medicine.
Program Planning.
Nominating.

Election of Officers.

Election of Section Council.

* HEALTH OFFICERS SECTION

Luncheon Session—Ivory Room, Sheraton-Jefferson Hotel

Presiding: Emil E. Palmquist, M.D., Chairman.

Chronic Illness as a Public Health Problem. Paul Q. Peterson, M.D.

This will be a discussion-participation luncheon similar to those held in former years. Copies of Dr. Peterson's paper will be distributed in advance to those making luncheon reservations. The paper will be discussed at the separate tables during luncheon and from the floor afterward. Dr. Peterson will be present to join in the discussion.

* MATERNAL AND CHILD HEALTH SECTION

Luncheon Session—Private Dining Room 7, Sheraton-Jefferson Hotel

Luncheon Speaker: John A. Scott, O.B.E., Q.H.P., F.R.S.H.

Discussant: Martha M. Eliot, M.D.

* MEDICAL CARE SECTION

Luncheon Session—Foyers 2 and 3, Statler Hotel

Sociological and Historical Background of Group Practice and Group Payment. George Rosen, M.D.

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* Tickets will be on sale at the registration desk.

Wednesday, 12:30 P.M.

* NATIONAL CITIZENS COMMITTEE FOR THE WORLD HEALTH ORGANIZATION

Luncheon and Afternoon Session—Gold Room, Sheraton-Jefferson Hotel

Presiding: James E. Perkins, M.D.
(Speakers to be announced.)

* PUBLIC HEALTH NURSING SECTION

Luncheon Session—Grand Ballroom, Statler Hotel

Wednesday, 2:30 P.M.

AMERICAN ASSOCIATION OF PUBLIC HEALTH PHYSICIANS

Assembly Hall 4, Kiel Auditorium

Presiding: Sanford P. Lehman, M.D.

Scientific Session.

Business Session.

AMERICAN SCHOOL HEALTH ASSOCIATION

Committee Rooms 4C and 4A, Kiel Auditorium

Group 1—Committee Room 4C, Kiel Auditorium

Presiding: Wesley P. Cushman, Ed.D.

HEALTH EDUCATION FOR PROSPECTIVE TEACHERS

The Washington Conference on Education Competencies for All Prospective Teachers. Catherine E. Vavra, R.N.

Health Education of Teachers at Southern Illinois University. Donald N. Boydston, Ed.D.

Basic Problems in Teacher Education. Elena M. Sliepcevich, D.P.E.

Discussion and Audience Participation.

Group 2—Committee Room 4A, Kiel Auditorium

SCHOOL PHYSICIAN RESPONSIBILITIES IN THE SCHOOLS—Panel Discussion

Moderator: Donald A. Dukelow, M.D.

Participants:
I. P. Barrett, M.D.
Florence L. Fogle, R.N.
Lloyd F. Richards, D.D.S.
William K. Streit.

Audience Participation.

* Tickets will be on sale at the registration desk.

Wednesday, 2:30 P.M.

ASSOCIATION OF STATE AND TERRITORIAL DIRECTORS OF PUBLIC HEALTH NURSING

Private Dining Room 2, Sheraton-Jefferson Hotel

ASSOCIATION OF STATE AND TERRITORIAL PUBLIC HEALTH NUTRITION DIRECTORS

Daniel Boone Room, Statler Hotel

CONFERENCE OF PUBLIC HEALTH VETERINARIANS

Committee Room 3B, Kiel Auditorium

DENTAL HEALTH AND EPIDEMIOLOGY SECTIONS

Committee Room C, Kiel Auditorium

Presiding: Linwood G. Grace, D.D.S.

THE EPIDEMIOLOGY OF CERTAIN ORAL CONDITIONS

Dental Problems in an Epidemiologic Perspective. John E. Gordon, M.D.

Assessment of Malocclusion in Population Groups. Lawrence E. Van Kirk, Jr., D.D.S.

Socioeconomic Status of Periodontal Disease in Birmingham, Ala. Albert L. Russell, D.D.S.; Polly Ayers, D.D.S.; and Charles J. Donnelly, D.D.S.

Differences in Certain Dental Conditions Among Southeast Asians. Frank C. McCombie, L.D.S.

ENGINEERING AND SANITATION, FOOD AND NUTRITION, HEALTH OFFICERS, AND PUBLIC HEALTH EDUCATION SECTIONS

Assembly Hall 2, Kiel Auditorium

Presiding: Emil E. Palmquist, M.D.

ACCIDENT CONTROL

Childhood Accidents. James L. Goddard, M.D.

Better Methods for Measuring the Impact of Accidents on the Community. Charles M. Cameron, Jr., M.D.

The Development of a Local Accident Control Program. Dwight M. Bissell, M.D.

The Philadelphia Accident Study. Emil A. Tiboni, M.P.H.

Discussant: J. Earl Smith, M.D.

Wednesday, 2:30 P.M.

ENGINEERING AND SANITATION SECTION, THE CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS, AND THE CONFERENCE OF STATE SANITARY ENGINEERS

Committee Room 4B, Kiel Auditorium

Presiding: Clarence I. Sterling, Jr., P.E.

NEW ASPECTS AND DEVELOPMENTS IN WATER AND LIQUID WASTES PRACTICE

Audience Participation Invited

Re-Use of Treated Waste Waters. Dwight F. Metzler, C.E.

Selection and Adaptation of Microorganisms in Waste Treatment. Paul W. Kabler, M.D.

Water Resources and Public Health. Milton P. Adams, P.E.

Experiences During a Severe Water Shortage in Dallas. Earle W. Sudderth, P.E.

LABORATORY SECTION

Private Dining Rooms 3, 4, and 5, Sheraton-Jefferson Hotel

CONCURRENT ROUND-TABLE DISCUSSIONS

Private Dining Room 3 **Laboratory Problems in Venereal Disease Control**

Discussion Leaders:

George R. Cannefax.
Paul Fugazzoto, Ph.D.
Warfield Garson, M.D.
Joseph Portnoy, Ph.D.
James D. Thayer, Ph.D.

The Clinical Significance of the RPCF Test.

The TPCF 50 Test for Syphilis.

Complement-Fixation Procedures.

N. Gonorrhoeae Susceptibility to Penicillin.

Private Dining Room 4 **Virological Diagnostic Services**

Discussion Leaders:

J. V. Irons, Sc.D.
S. S. Kalter, M.D.
M. Michael Sigel, Ph.D.

Operational Problems.

The Practical Application of the Rapidly Expanding Knowledge.

Interrelationships of the Diagnostic and Research Virological Laboratories.

The Virologist as a Member of the Public Health Team.

Private Dining Room 5 **Mycobacteriae**

Discussion Leader: Ernest H. Runyon, Ph.D.

Relative Efficacy of Culture Media.

The Peroxidase Test.

Atypical Acid-Fast Bacilli.

Sensitivity Testing.

Wednesday, 2:30 P.M.

LABORATORY SECTION

Private Dining Room 6, Sheraton-Jefferson Hotel

Presiding: Luther A. Black, Ph.D.

Membrane Filters for Coliform and Total Counts of Milk. Archie H. Robertson, Ph.D.

Statistical Comparison of Logarithmic-Average, 3-Out-of-4, and 3-Out-of-5 Methods for Grading Milk by Plate Counts. Eugene K. Harris, Ph.D.; Luther A. Black, Ph.D.; and C. E. Zimmer.

Current Studies on Growth and Survival of Staphylococci in Milk and Concentrated Milks. J. C. Olson, Jr., and E. George.

Sampling Farm Tank Milk Shipments. Milton R. Fisher, D.V.M.

MATERNAL AND CHILD HEALTH SECTION

Committee Room 3C, Kiel Auditorium

Presiding: Martha L. Clifford, M.D.

Community Effectiveness in Meeting the Needs of Mentally Retarded Children. Robert W. Deisher, M.D., and R. S. Justice, M.D.

A Program for Prophylaxis of Otitis Media in an Indian Population. Paul R. Ensign, M.D.; Edward Urbanich, M.D.; and Mabel Moran, R.N.

School Services for Handicapped Children in Urban Areas. Helen M. Wallace, M.D., and Helen M. Starr, Ph.D.

Orthopedic Outpatient Services in New York City. Report of a Survey, 1957. Robert S. Siffert, M.D.; Margaret A. Losty, R.N.; and Sylvia Snyder.

Children with Congenital Heart Disease in State Crippled Children's Programs. Alice D. Chenoweth, M.D.; Harold Herman; and Sadie Saffian.

MEDICAL CARE SECTION

Foyers 2 and 3, Statler Hotel

Presiding: George A. Silver, M.D.

FINANCING MEDICAL CARE FOR THE AGED

The Problem: The Role of Government. Franz Goldmann, M.D.

Public Welfare Viewpoint. Mary S. Weaver.

The Viewpoint of Organized Medicine. Henry A. Holle, M.D.

Voluntary Health Insurance Viewpoint. J. F. Follmann, Jr.

The Hospitals' Viewpoint. James P. Dixon, M.D.

Wednesday, 2:30 P.M.

MENTAL HEALTH SECTION AND THE JOINT COMMISSION ON MENTAL ILLNESS AND HEALTH

Committee Room 3D, Kiel Auditorium

TARGETS IN THE CARE OF THE MENTALLY ILL

Part II: Rehabilitation of the Mentally Ill Patient—Panel Discussion

Moderator: Robert H. Felix, M.D.

Keynote Speaker: Leonard S. Cottrell, Jr., Ph.D.

Participants:

Bertram J. Black.
Robert W. Hyde, M.D.
Ozzie G. Simmons.
Gwen Tudor Will, R.N.
Richard Williams, Ph.D.

Open Discussion.

NATIONAL ASSOCIATION OF SANITARIANS' REGIONAL CONFERENCE

Dallas Room and Los Angeles Room, Statler Hotel

Presiding: E. Russell Jackson and Franklin Fiske, M.S.P.H.

Survey and Evaluation of Sanitation Services. Vlado A. Getting, Dr.P.H.

Sanitation and Poliomyelitis. A. Harry Bliss, M.P.H.

PUBLIC HEALTH CANCER ASSOCIATION OF AMERICA

Assembly Hall 1, Kiel Auditorium

PUBLIC HEALTH NURSING SECTION

Assembly Hall 3, Kiel Auditorium

Presiding: Julia D. Smith, R.N., Chairman.

CAPSULE REPORTS OF PUBLIC HEALTH NURSING RESEARCH

Five Minute Presentations:

A Method of Improving the Professional Qualifications and Performance of Oklahoma Nurses Employed in Public Health. Josephine L. Daniel, R.N.

Austin School Health Study. E. Barbara Stocking, M.P.H.

An Investigation of Needs of Released Mental Patients on Tranquilizing Drugs in Relation to Recommending a Public Health Nursing Follow-Up Program. Ida Gelber, R.N.

Essentials of Public Health Nursing Field Experience. Ann C. Hanson, R.N.

The Professional Nurse in Public Health. Walter Johnson, Ph.D.

Curbstone Conferences on These Projects.

Wednesday, 2:30 P.M.

STATISTICS SECTION

Committee Room 3A, Kiel Auditorium

Presiding: Bernard G. Greenberg, Ph.D., Chairman.

STATISTICAL STUDIES OF CERTAIN HEALTH PROBLEMS

A Study of Patterns of Patient Referral to a Medical Clinic in a Rural State. L. P. Andrews, M.D.; Earl Diamond; Kerr L. White, M.D.; T. F. Williams, M.D.; Bernard G. Greenberg, Ph.D.; A. Hamrick; and E. Hunter.

Survey of the Extent of Voluntary Health Insurance Coverage in the United States. David Robbins, M.P.H.

Use of Records in a Medical Care Plan for Studying Epidemiology of Pregnancy Wastage. Sam Shapiro and Paul M. Densen, D.Sc.

Accidents as Causes of Hospitalization. Marta Fraenkel, M.D.

Wednesday, 5:30 P.M.

COUNCIL OF CONSULTANTS OF THE NATIONAL SANITATION FOUNDATION

Social Hour, Followed by Dinner and Evening Session at 6:30 P.M., Private Dining Room 8, Statler Hotel

* DENTAL HEALTH SECTION

Social Hour, 5:30–7:00 P.M., Foyer 2 and Foyer 3, Statler Hotel

* FOOD AND NUTRITION SECTION

Social Hour, 5:30–7:00 P.M., Private Dining Room 9, Sheraton-Jefferson Hotel

* HARVARD PUBLIC HEALTH ALUMNI ASSOCIATION

Social Hour, Followed by Dinner at 6:30 P.M., Ivory Room, Sheraton-Jefferson Hotel

* LABORATORY SECTION

Social Hour, 5:30–7:00 P.M., Missouri Room, Statler Hotel

* UNIVERSITY OF MINNESOTA

Social Hour, Followed by Dinner at 6:30 P.M., Dallas Room, Los Angeles Room, and Washington Room, Statler Hotel

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* Tickets will be on sale at the registration desk.

Wednesday, 5:30 P.M.

* UNIVERSITY OF PITTSBURGH ALUMNI

Social Hour, 5:30–7:00 P.M., Private Dining Room 1, Statler Hotel

Wednesday, 6:30 P.M.

* AMERICAN SCHOOL HEALTH ASSOCIATION

Annual Banquet and Evening Session—Grand Ballroom, Statler Hotel

Presiding: Ruth Weaver, M.D., President.

Presentation of the William A. Howe Award to W. W. Bauer, M.D. Charles C. Wilson, M.D.

How Fit Is Fit? W. W. Bauer, M.D.

Entertainment by Pupils from the University City Public Schools.

* CONFERENCE OF PUBLIC HEALTH VETERINARIANS

Dinner and Evening Session—Private Dining Room 7, Sheraton-Jefferson Hotel

Wednesday, 8:00 P.M.

AMERICAN COLLEGE OF PREVENTIVE MEDICINE

Crystal Room, Sheraton-Jefferson Hotel

Presiding: V. A. Van Volkenburgh, M.D., President.

Arteriosclerosis—Its Multifaceted Nature. Irvine H. Page, M.D.

Business Session.

AMERICAN SOCIETY OF PROFESSIONAL BIOLOGISTS

Private Dining Room 4, Sheraton-Jefferson Hotel

ASSOCIATION OF BUSINESS MANAGEMENT IN PUBLIC HEALTH

Private Dining Room 3, Sheraton-Jefferson Hotel

Presiding: Sam A. Kimble, President.

Business Session.

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* Tickets will be on sale at the registration desk.

Wednesday, 8:00 P.M.

MEDICAL CARE SECTION

St. Louis Room, Statler Hotel

Presiding: Lucille M. Smith, Chairman.

AN EVENING WITH GEORGE PERROTT

Thursday, 8:00 A.M.

*COMMISSIONED OFFICERS ASSOCIATION OF THE U. S. PUBLIC HEALTH SERVICE

Breakfast Session—Missouri Room, Statler Hotel

*YALE UNIVERSITY ALUMNI

Breakfast Session—Ivory Room, Sheraton-Jefferson Hotel

Thursday, 9:45 A.M.

AMERICAN COLLEGE OF PREVENTIVE MEDICINE

Committee Room 4C, Kiel Auditorium

Presiding: James H. Sterner, M.D.

The Federal Government and the National Health. Aims C. McGuinness, M.D.

Programmatic Research in the Field of Health. Kenneth M. Endicott, M.D.

Living in a Radioactive World. Thomas L. Shipman, M.D.

Physiological Problems of Space Flight. Major Stanley C. White, USAF (MC)

AMERICAN SCHOOL HEALTH ASSOCIATION

Assembly Hall 3, Kiel Auditorium

Presiding: Delbert Oberteuffer, Ph.D.

SAFETY AND ACCIDENT PREVENTION AMONG SCHOOL CHILDREN—A Symposium

Moderator: George M. Wheatley, M.D.

School Safety. Gerald J. Hase, H.S.D.

Community Safety. Phillip N. Streit.

Home Safety. James L. Goddard, M.D.

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*Tickets will be on sale at the registration desk.

Thursday, 9:45 A.M.

ASSOCIATION OF BUSINESS MANAGEMENT IN PUBLIC HEALTH

Committee Room 3D, Kiel Auditorium

Presiding: Paul E. Fox.

OPERATIONAL RESEARCH: ITS APPLICABILITY IN PUBLIC HEALTH ADMINISTRATION

Concepts, Processes, and Potentialities. David B. Hertz, Ph.D.

Operational Testing of a Publications' Distribution System. Howard W. Ennes, Jr., M.P.H.; Benjamin A. Silsbee, M.P.H.; and Wallace C. Fulton, M.P.H.

ASSOCIATION OF RESERVE OFFICERS OF THE U. S. PUBLIC HEALTH SERVICE

Committee Room 4A, Kiel Auditorium

CONFERENCE OF MUNICIPAL PUBLIC HEALTH NURSING DIRECTORS

Private Dining Room 4, Sheraton-Jefferson Hotel

Attendance Limited to Directors of Municipal Public Health Nursing Services

CONFERENCE OF PUBLIC HEALTH VETERINARIANS

Committee Room 4B, Kiel Auditorium

ENGINEERING AND SANITATION SECTION AND THE CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS

Committee Room 3B, Kiel Auditorium

Presiding: H. Clifford Mitchell, P.E.

Administration and Design of Individual Household Aerobic Sewage Treatment Systems. (Speaker to be announced.)

Discussant: Edward L. Stockton.

Design Operation and Regulation of Swimming Pools—Public and Private. Clarence W. Klassen, P.E.

Newer Insecticides and Their Applications. Philip J. Spear, Ph.D.

Audience Participation Invited.

Thursday, 9:45 A.M.

EPIDEMIOLOGY SECTION

Committee Room 3C, Kiel Auditorium

Presiding: Theodore H. Ingalls, M.D., Chairman.

Intestinal Infections in the Arctic. John E. Gordon, M.D., and Frank L. Babbott, Jr., M.D.

Evaluation of Tuberculin-Positive Children of School and Preschool Age as Leads to Tuberculosis Foci in Communities with Relatively Underdeveloped Resources. Abdel Rahim Omran, M.D.

Prophylactic Effects of Isoniazid on Primary Tuberculosis in Children—Further Observations. Shirley H. Ferebee and Frank W. Mount, M.D.

Lung Cancer Detected by Survey Methods. Katharine R. Boucot, M.D.; Utako Horie, M.D.; and Martin J. Sokoloff, M.D.

Virological Epidemiology of the 1958 Epidemic of Kyasanur Forest Disease. Telford H. Work, M.D.

GOVERNING COUNCIL, AMERICAN PUBLIC HEALTH ASSOCIATION

Crystal Room, Sheraton-Jefferson Hotel

Open Meeting—All Members of the Association Are Welcome

HEALTH OFFICERS AND OCCUPATIONAL HEALTH SECTIONS

Assembly Hall 1, Kiel Auditorium

SHOULD AN OCCUPATIONAL HEALTH PROGRAM BE INCLUDED IN LOCAL HEALTH DEPARTMENT ACTIVITIES?

Should an Occupational Health Program Be Included in Local Health Department Activities? William L. Wilson, M.D.

To Each His Own. Lester M. Petrie, M.D.

The Problems of a Local Occupational Health Unit. William G. Fredrick, Sc.D.

Practical Considerations: Staff, Budget, Material. Harold J. Magnuson, M.D.

Thursday, 9:45 A.M.

LABORATORY SECTION AND THE CONFERENCE OF STATE AND PROVINCIAL PUBLIC HEALTH LABORATORY DIRECTORS

Committee Room 3A, Kiel Auditorium

Presiding: Howard L. Bodily, Ph.D.

APPLICATION OF FLUORESCENT ANTIBODY REACTIONS TO THE DIAGNOSIS OF INFECTIOUS DISEASES

Introduction of Subject and Studies on Certain Viral Diseases. Chien Liu, M.D.

Rickettsial and Other Viral Diseases. Charles C. Shepard, M.D.

Bacterial Diseases. William B. Cherry, Ph.D., and Max D. Moody, Ph.D.

Venereal Diseases. W. E. Deacon, Ph.D.

Invited Discussion.

MATERNAL AND CHILD HEALTH SECTION

Committee Room C, Kiel Auditorium

Presiding: Samuel M. Wishik, M.D.

CHILDREN WHO ARE SOCIALLY DISADVANTAGED

Adoptions. Geoffrey M. Martin, M.D.

Juvenile Delinquency. Philip Green.

Day Care. Cornelia Goldsmith.

Behavior Disturbances of School Children in Relation to the Preschool Period. Ella Oppenheimer, M.D., and Margaret R. Mandel.

Business Session.

MENTAL HEALTH SECTION

Foyer 3, Statler Hotel

Presiding: Joseph Zubin, Ph.D.

SUICIDE AS A PUBLIC HEALTH PROBLEM

Suicide and Attempted Suicide in New York City. Guido M. Crocetti, Ph.D.

(Discussant to be announced.)

Observations Concerning the Prevention of Suicides: A Study of 134 Cases of Successful (Completed) Suicides. Eli Robins, M.D.; Jack Kayes, M.D.; Seymour Gassner, M.D.; Robert H. Wilkinson, Jr., M.D.; and George E. Murphy, M.D.

(Discussant to be announced.)

(Cont.)

Thursday, 9:45 A.M.

MENTAL HEALTH SECTION—(Cont.)

The Role of the Health Department in the Control and Prevention of Suicides. Edward Press, M.D.

(Discussant to be announced.)

NATIONAL HEALTH COUNCIL

Daniel Boone Room, Statler Hotel

MANPOWER SHORTAGES IN THE FIELD OF PUBLIC HEALTH

What is being done—or not being done—to meet it?

How can public health people foster greater interest and participation in efforts to meet the manpower needs in health?

(Speakers to be announced.)

NATIONAL SOCIETY FOR THE PREVENTION OF BLINDNESS AND THE MISSOURI AFFILIATE

Dallas Room and Los Angeles Room, Statler Hotel

Presiding: Ira V. Hiscock, Sc.D., President.

CHILDREN'S EYE PROBLEMS

Medical Aspects of Reading Failures in Intelligent School Children. George E. Park, M.D.

Ophthalmic Aspects of Vision Screening. James E. Miller, M.D.

Progress Report on School Vision Screening in Prince George's County. Mary A. Thompson.

Preschool Vision Screening. Florence Cunningham, R.N.

Educational Programs Needed for Partially-Seeing Children. Dorothy Bryan.

PUBLIC HEALTH CANCER ASSOCIATION OF AMERICA

Assembly Hall 2, Kiel Auditorium

Thursday, 9:45 A.M.

PUBLIC HEALTH NURSING SECTION

Assembly Hall 4, Kiel Auditorium

Presiding: Julia D. Smith, Chairman.

THE CHALLENGE OF COMMUNICABLE DISEASE TODAY

Let's Look at Opportunity. Mary R. Lester, R.N.

A Look at the Needs in Tuberculosis Control. M. Estelle Hunt, R.N.

A Look at the Needs in Venereal Disease Control. E. Alice Clark, R.N.

A Look at the Number One Communicable Disease Problem—Prevention and Control:

A Challenge to the Hospital. (Speaker to be announced.)

A Challenge to the Community. Ellen McDonald, R.N.

SCHOOL HEALTH SECTION

Private Dining Rooms 2, 3, 7, 8, and 9, Sheraton-Jefferson Hotel

SECTION COMMITTEES—Open Discussion:

Private Dining Room 2

Membership. Marjorie L. Craig.

Private Dining Room 3

Editorial. Patricia J. Hill, M.P.H.

Private Dining Room 5

Hearing Conservation. C. Adele Brown, M.D.

Private Dining Room 7

Rural School Health Services. Jennelle V. Moorhead.

Private Dining Room 8

Juvenile Delinquency. Carl L. Anderson, Dr.P.H.

Private Dining Room 9

Research. Wesley M. Staton, Ed.D.

STATISTICS SECTION AND THE AMERICAN ASSOCIATION FOR VITAL RECORDS AND PUBLIC HEALTH STATISTICS

St. Louis Room, Statler Hotel

Presiding: Albert E. Bailey, Ph.D.

Jewish Mortality in St. Louis and St. Louis County. Kurt Gorwitz.

Accident Mortality Data as Epidemiologic Indicators. Albert P. Iskrant.

The Navy's Medical Statistics for the Administrator. Wilbur V. Charter, Dr.P.H.

Methods of Studying the Relation of Employment and Long-Term Illness. Thomas F. Mancuso, M.D., and Elizabeth J. Coulter, Ph.D.

Thursday, 12:30 P.M.

* DELTA OMEGA

Luncheon Session—Private Dining Room 9, Sheraton-Jefferson Hotel

* INTERNATIONAL HEALTH ALUMNI

Sponsored by the Public Health Division, U.S. International Cooperation Administration

Luncheon Session—Gold Room, Sheraton-Jefferson Hotel

* MEDICAL CARE SECTION

Luncheon Session—Ivory Room, Sheraton-Jefferson Hotel

Presiding: Lucille M. Smith, Chairman.

* MENTAL HEALTH SECTION

Luncheon Session—Foyer 3, Statler Hotel

* STATISTICS SECTION

Luncheon Session—St. Louis Room, Statler Hotel

Presiding: Bernard G. Greenberg, Ph.D., Chairman.

High-Level Wellness in the Modern World. Halbert L. Dunn, M.D.

Reports of Committees.

* UNIVERSITY OF CALIFORNIA PUBLIC HEALTH ALUMNI ASSOCIATION

Luncheon Session—Private Dining Room 1, Sheraton-Jefferson Hotel

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* Tickets will be on sale at the registration desk.

Thursday, 2:30 P.M.

DENTAL HEALTH SECTION

Committee Room 3A, Kiel Auditorium

Presiding: Linwood G. Grace, D.D.S., Chairman.

THE DENTAL PRACTITIONER AND X-RADIATION

The Biological Effects of X-Rays. Donald R. Chadwick, M.D.

Practical Methods for Reduction of X-Radiation Exposure. Albert G. Richards.

How to Implement Our Present Knowledge—Panel Discussion

The State Health Department. John W. Stone, D.D.S.
The Local Health Department. Leonard F. Menczer, D.D.S.

ENGINEERING AND SANITATION AND PUBLIC HEALTH EDUCATION SECTIONS

Assembly Hall 1, Kiel Auditorium

Presiding: Ralph H. Boatman, Ph.D.

STIMULATING PUBLIC AWARENESS AND MOTIVATION FOR PUBLIC HEALTH

Why We Should Concern Ourselves with John Q. Public—A Symposium

Moderator: Ralph H. Boatman, Ph.D.

Participants:

Viewpoint of Lay Consumer. Marion Rauschenbach.
Viewpoint of Industry. G. B. Fox.
Viewpoint of the Public Health Professional. Sewall O. Milliken, M.P.H.

What Does Research in Motivation Suggest for Public Health Programs? Irwin M. Rosenstock, Ph.D.

How We Have Attempted to Build Public Awareness and Motivation into Environmental Health Activities—A Symposium

Moderator: Ralph H. Boatman, Ph.D.

Participants:

In Housing. Hugh G. Blanding, M.P.H.
In Food and Milk. Robert E. Mytinger, M.P.H.
In Water Resources. Edward J. Cleary.

Thursday, 2:30 P.M.

EPIDEMIOLOGY, FOOD AND NUTRITION, AND STATISTICS SECTIONS

Committee Room 3C, Kiel Auditorium

Presiding: Bernard G. Greenberg, Ph.D.

STUDIES OF NONRHEUMATIC CARDIAC DISEASE

Cardiovascular-Renal Diseases Reported on Death Certificates—An Epidemiological Study. Robert J. Keehn and Henry H. Eisenberg, M.D.

A Short-Term Community Study of the Epidemiology of Coronary Heart Disease—A Preliminary Report on the North Dakota Study. William J. Zukel, M.D.; Robert H. Lewis, M.D.; Philip E. Enterline; Robert C. Painter, M.D.; Lloyd S. Ralston, M.D.; Robert M. Fawcett, M.D.; Alla P. Meredith; and Beatrice Peterson.

Some Factors Associated with the Development of Coronary Heart Disease: Six-Years' Follow-Up Experience in the Framingham Study. Thomas R. Dawber, M.D.; William B. Kannel, M.D.; Nicholas Revotskie, M.D.; Joseph Stokes, Jr., M.D.; Abraham Kagan, M.D.; and Tavia Gordon.

Prevalence and Incidence of Coronary and Hypertensive Heart Disease in Strata of the Labor Force of a Chicago Industrial Corporation. Jeremiah Stamler, M.D.; Howard A. Lindberg, M.D.; David Berkson, M.D.; and Aaron Shaffer, M.D.

HEALTH OFFICERS AND MENTAL HEALTH SECTIONS

Assembly Hall 2, Kiel Auditorium

Presiding: Emil E. Palmquist, M.D.

ALCOHOLISM CONTROL

Studies in Alcohol Addiction. (Speaker to be announced.)

The Private Physician's Role in Early Detection of Alcoholism. Marvin A. Block, M.D.

The Success Story of a Local Health Department in Alcoholism Control. Winston B. Prothro, M.D.

The Experience of the California State Department of Public Health. John R. Philp, M.D.

A Resumé of Other Success Stories. Marty Mann.

LABORATORY SECTION

Committee Room C, Kiel Auditorium

Presiding: Howard L. Bodily, Ph.D., Chairman.

Study on Antibodies Against Enteric Pathogens in Human Gamma Globulin. Erwin Neter, M.D.; Anne Drislane, M.D.; Albert H. Harris, M.D.; and Eugene A. Gorzynski.

(Cont.)

Thursday, 2:30 P.M.

LABORATORY SECTION—(Cont.)

Rapid Heat Method for the Production of a Vaccine Against Salmonella typhimurium. Warren Litsky, Ph.D.

Studies on a Combined Diphtheria-Pertussis-Tetanus-Poliomyelitis Vaccine. Lee F. Schuchardt.

Quantitation of Cholesterol in the Public Health Laboratory. Nell F. Hollinger, Ph.D.

Detection in Human Sera of Cancer Antigens by the Schultz-Dale Method and of Cancer Antibodies by an Intradermal Reaction. Jack G. Makari, M.D.

Pulmonary Lesions in Mice Following Consecutive Myxovirus Infection. Patsy Ruth Fowler and Charles J. McCammon, M.D.

MATERNAL AND CHILD HEALTH, PUBLIC HEALTH NURSING, AND SCHOOL HEALTH SECTIONS, AND THE AMERICAN SCHOOL HEALTH ASSOCIATION

Assembly Hall 4, Kiel Auditorium

Presiding: Edward R. Schlesinger, M.D.

Psychological Needs of the Adolescent. George Williams, M.D.

Pediatric Needs of the Adolescent. Clifton D. Govan, M.D.

Health Services for Secondary Schools. Alan Foord, M.D.

MEDICAL CARE SECTION

Ivory Room, Sheraton-Jefferson Hotel

Evaluation of the Medical Care Section. Henry B. Makover, M.D.

Thursday, 5:30 P.M.

* MATERNAL AND CHILD HEALTH SECTION

Social Hour, 5:30–7:00 P.M., Private Dining Room 3, Sheraton-Jefferson Hotel

Thursday, 6:00 P.M.

* SOCIAL WORKERS IN HEALTH AND WELFARE PROGRAMS

Dinner Session, Private Dining Room 1, Sheraton-Jefferson Hotel

SOCIAL WORK RESEARCH IN CARE OF THE AGED—Panel Discussion

Moderator: Lester Breslow, M.D.

Participants:

Adriane V. Duffy.
William E. Gordon.
Frances C. Jeffers.
Elinor S. Levy.
Celia R. Moss.
Kurt Reichert, Ph.D.

Thursday, 8:30 P.M.

SECOND GENERAL SESSION

Gold Room, Sheraton-Jefferson Hotel

Presiding: Roy J. Morton, C.E., President, American Public Health Association.

Presentation of the Albert Lasker Awards of the American Public Health Association for 1958.

Announcement of New Officers, Resolutions.

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* Tickets will be on sale at the registration desk.

Friday, 9:45 A.M.

ASSOCIATION SYMPOSIUM

Gold Room, Sheraton-Jefferson Hotel

The Friday Symposium at the 85th Annual Meeting was devoted to the activities of the APHA, with special reference to the Report of the Task Force. The session was recorded. A playback six months later revealed how many questions, unanswered or partially unanswered last November, can now be stated as affirmatives.

The second Symposium will consist of portions of last year's tape recording, with today's situations described in relation thereto by a panel of Association leaders.

Friday, 12:30 P.M.

MEETING OF ALL SECTION COUNCILS WITH THE EDITORIAL BOARD

Luncheon Session—Crystal Room, Sheraton-Jefferson Hotel

Past and Present Section Secretaries and Secretaries-Elect Are Invited

THE SCIENTIFIC AND TECHNICAL EXHIBITS

86th Annual Meeting—October 27–30, 1958

St. Louis, Mo., Kiel Auditorium

SCIENTIFIC EXHIBITORS

and what they are showing

American Dietetic Association—adequate modified diets based on normal nutrition

American Hospital Association—promoting better patient care

American Medical Association—seven paths to fitness

American Nurses' Association—nursing

American Occupational Therapy Association—occupational therapy activities

American Optometric Association—detecting visual needs through screening

American Osteopathic Association—rural health clinics in Missouri

American Social Hygiene Association—focus on family life

American Red Cross—nursing services; first aid training to prevent accidents

Armed Forces Institute of Pathology—pathology of experimental animals utilized in acceleration and deceleration studies; entomology in the Armed Forces; women in medicine

Baltimore City Health Department—research and planning capabilities of a local health department

Boy Scouts of America—safety program

Canadian Department of Health and Welfare—Canada's Health Plan

Colgate-Palmolive Company—

Committee on Child Health, APHA—publications

Department of Health, Education, and Welfare:

Children's Bureau—

Communicable Disease Center, Atlanta—staphylococcus infections

Division of Dental Public Health—climate and fluoridation

Division of Hospital and Medical Facilities—facilities tailored to patient needs

Division of International Health and U. S. Department of Commerce—health precautions in foreign traveling

Division of Special Health Services—

Public Health Service—radiological health; poison control centers; Aetna Drivotrainer, Cornell Liberty survival car

Equitable Life Assurance Society of the United States—health education publications

Illinois Department of Public Health—prevention and management of prematurity

Joseph Bulova School of Watchmaking—rehabilitation of the severely disabled

International Cooperation Administration—malaria eradication

Medical Society of Pennsylvania—services to the practicing physician from a well organized county health department

Mental Health Materials Center—publications and films for health educators

Metropolitan Life Insurance Company—interdependency of family living

Muscular Dystrophy Associations of

America—manifestations of muscular dystrophy

National Association for Mental Health—the mentally ill can come back

National Council on Alcoholism—alcoholism is a disease

National Association of Social Workers—social work's contribution to public health

National Foundation—laboratory diagnosis of aseptic meningitis

National Health Council—a conference ground for health organizations

National League for Nursing—publications on the administration of public health nursing services

National Sanitation Foundation—cleanliness and health

National Society for Crippled Children and Adults—child growth and development through toys

National Society for the Prevention of Blindness and the Missouri Affiliate—cataract blindness is preventable

National Tuberculosis Association—TB respects no age

New York State Health Department—preventive medicine in private practice

Pan American Sanitary Bureau—international public health in the Americas

Pennsylvania Health Department—control of water pollution

Philadelphia Department of Public Health—sacred cows of public health

Stritch School of Medicine, Loyola University—common diseases of the skin and their clinical definition

Tobacco Industry Research Committee—research program of the Scientific Advisory Board

U. S. Air Force Medical Service—the "Bopper," demonstration device to expose volunteer subjects to positive "G" forces; human tolerance to mechanical forces

U. S. Army—radiologic hygiene program; occupational health service of the Army

U. S. Army Chemical Corps—bacterial air sampling devices

U. S. Army Medical Service—history of the Medical Department, U. S. Army, in World War II

Veterans Administration—epidemiology and clinical aspects of sarcoidosis.

TECHNICAL EXHIBITORS

and what they are showing

Airkem, Inc.—odor control products, including space and contact odor counteractants, odor controlled detergent-sanitizers and insecticides, for total environmental sanitation

Aloe Scientific—general laboratory equipment and furniture

American Can Co.—literature of interest to the public health official

American Cyanamid Co., Surgical Products Division—syringes, hypodermic and biopsy needles, sterile strip-packs, sutures and surgical products, Surgaire—sterile deodorant spray ointment and skin protectant

American Medical Association, "Today's Health Magazine"—AMA publication

American Tobacco Co., Research Laboratory—display depicting growth and processing of tobacco with emphasis on scientific research

Association Conventions Exhibits—combined book exhibit and APHA publications

Atomic Shielding Code Authority, Inc.—testing shields to prevent escape of atomic radiation

Baltimore Biological Laboratory, Inc., Division of Becton, Dickinson & Co.—BBL Sensi-Disc Dispenser for automatically placing BBL Sensi-Discs in bacterial disc-plate sensitivity testing and other BBL products for the microbiological laboratory, including Cappel Laboratory Division reagents

Becton, Dickinson & Co.—disposable hypodermic syringes and needles

Bellco Glass, Inc.—Morton stainless steel culture tube closures, tissue culture glassware, and biological glassware

Beltone Hearing Aid Co., Audiometer Division—hearing testing equipment and audiometers

Blakiston Division, McGraw-Hill Book Co.—medical and reference books

George A. Breon & Co., Homemakers Products Division—Diaparene chloride products

Bristol Laboratories, Inc.—antibiotics and a replica of an old-time drug store interior

Bristol-Myers Products Division, Bristol-Myers Co.—free visual aids for teaching dental health and personal grooming.

Carnation Co.—refreshing Carnation Instant Nonfat Milk and information on Carnation milk products and services for hospitals

Case Laboratories, Inc.—products for the bacteriological laboratory

Cereal Institute, Inc.—nutrition education materials

Chilean Iodine Educational Bureau, Inc.—emphasizes public health values of iodine compounds and preparations used in medicine, surgery, nutrition, and sanitation

Coca-Cola Co.—ice cold Coca-Cola

Corn Products Sales Co.—Mazola Corn Oil for diet, Karo Syrup for infant feeding and Bosco Milk Amplifier

D'Armigene, Inc.—professional nurses uniforms

Difco Laboratories—clinical laboratory reagents, culture media, etc.

E. I. du Pont de Nemours & Co.—Lysine exhibit on nutrition

Encyclopaedia Britannica, Inc.—new 1958 edition

Everpure, Inc.—water purification equipment

Forster Manufacturing Co., Inc.—woodenware—spoons, forks, tongue depressors, etc.

Galvanized Ware Manufacturers Council—educational aids to health officers and sanitarians

Getz Exterminators, Inc.—sanitation consultation services and pest control and termite control services

Hach Chemical Co.—automatic fluoride analyzers

Halsey X-Ray Products, Inc.—multi-film cassettes, banked illuminators, film viewers, protective aprons, and gloves for body section radiology

Hartz Mountain Products Corp.—Hartz Mountain pet foods

Health Insurance Council—general information on health insurance and on uniform claim forms

Hercules Filter Corp.—laboratory filters

Hobart Manufacturing Co.—glass and dishwashers, mixer with slicer

John Hancock Mutual Life Insurance Co.—educational booklets on improvement of the public's health

Kimberly-Clark Corp.—health education materials on menstrual hygiene and cold prevention

Kimble Glass Co.—new line of Kimax laboratory glassware

Knapp Mills, Inc.—photographs and information related to shielding against the escape of nuclear radiation in nuclear industries

Licensed Beverage Industries, Inc.—literature on alcoholism as a medical and public health problem

Lorvic Corp.—Karidium (sodium fluoride) tablets; Odara concentrate (mouth wash)

The Macmillan Co.—books of current interest to the public health and medical profession

Maico Electronics, Inc.—audiometers and auditory training equipment

Medical Case History Bureau—the Info-Dix Cancer Registry System

Medical Coaches, Inc.—large detailed scale models showing interior furnishings of mobile clinics

George T. Meillon, Inc.—radiation protection and measuring devices and multiple x-ray equipment

Merck Sharp & Dohme, Division of Merck & Co., Inc.—Diuril a new saluretic agent

C. V. Mosby Co.—medical, dental, nursing, and college text and reference books related to any and all aspects of public health and preventive medicine

National Automatic Merchandising Assn.—the industry's public health program on sanitation of food and beverage vending machines

National Dairy Council—health education materials concerning infant feeding, weight control, teen-age and geriatric nutrition problems

National Livestock & Meat Board—nutrition education information

Nuclear-Chicago Corp.—radiation measuring instruments for clinical research and diagnosis

Hermien Nusbaum & Associates—demonstration material and literature for nurses for use in prenatal classes and home calls, Evenflo feed equipment, TFL Clinic Dropper, Lifebuoy Soap

Office Machines, Inc.—Thermo-Fax copying products

Oval Wood Dish Corp.—Ritespoons, Riteforks, and the new and improved tongue depressor—Ritespoon Tongue Blade

Parke, Davis & Co.—pharmaceuticals, biologicals, surgical dressings—important Parke, Davis specialties

Pepsi-Cola Co.—light refreshing Pepsi

Pet Milk Co.—educational literature on Pet Evaporated Milk for infant feeding and Pet Instant Nonfat Dry Milk for special diets

Pfizer Laboratories, Division of Chas. Pfizer & Co., Inc.—

Powers X-Ray Products, Inc.—equipment for group chest x-ray programs

Procter & Gamble Co.—Ivory Soap leaflet pads and other helpful materials prepared especially for the physician

Professional Tape Co., Inc.—Time Tape, Time Labels, Time Radioactive Labels, etc.

Public Health Committee of the Paper Cup & Container Institute, Inc.—"Health Officers News Digest" reporting recent developments in food service sanitation and health education. Information available on 1959 Samuel J. Crumbine Awards competition available

Roberts Instrument Company, Inc.—Multiple Target Screener, a visual field screening device

Ross Laboratories—Ross Development Series visual materials and Similac, ethically advertised infant formula

W. B. Saunders Co.—publications in the health sciences and related areas

The School Health Supply Co.—first aid room equipment exclusively designed for health departments, schools, and industry—complete line of Johnson & Johnson and Bauer & Black supplies

Scientific Products—newly developed specialties in equipment, supplies, and diagnostic reagents; also a message center for laboratory directors and laboratory personnel

Sealright Co., Inc.—double sanitary protective milk closures; Sealright line

of sanitary containers for hospital use

Seven-Up Co.—vending machines for hospital offices and waiting rooms and a "Fresh-Up with 7-Up"

Smith Kline & French Laboratories—history of the oral dosage form of medication

Sonotone Corp.—hearing aids and audiometers

Ivan Sorvall, Inc.—a number of completely new Sorvall centrifuge developments and several new LKE chromatography and electrophoresis instruments

E. R. Squibb & Sons—new products and improvements in therapeutic agents

Sterwin Chemicals, Inc.—Roccal sanitizing agent and other quaternary germicides

Swift & Co., Canned Foods Department—baby food products and educational reprints of studies

Tampax, Inc.—educational literature and anatomical charts on menstrual health

Technicon Co., Inc.—new Technicon Auto-Analyser for automatic analytical chemistry and other products

Titmus Optical Co.—T/O vision tester, safety eyewear, and occupational lens

U. S. Brewers Foundation, Inc.—photo montage of brewing process and educational USBF literature

Vestal, Inc.—Septicol antiseptic liquid soap; Staphene and Vesphene germicidal disinfectants

Waring Products Corp.—Blendors, aseptic container, commercial and explosive-proof blendors

West Chemical Products, Inc.—Wescodyne, general purpose detergent germicide

Wyco International—Tossits for mosquito larvae control

Wyeth Laboratories—Bicillin injection and Sparine

Zenith Radio Corp., Hearing Aid Division—hearing aids, radios, television

NOMINATIONS FOR SECTION OFFICES

Following are lists of nominations for certain Sections that were submitted by the Section Nominating Committees in time for publication in the September Journal. All nominees are Fellows of the respective Sections as required in the Constitution and By-Laws of the Association. The terms of office are for one year unless otherwise stated.

The By-Laws provide that "if the name of any Fellow be transmitted to the Section Committee on Nominations over the signature of ten Fellows or members of the Section prior to the first meeting of the Section, the Section Committee on Nominations shall add the name of such Fellow to its own list of nominees." Fellows and members who wish to add names by petition should communicate with the Section Secretary whose name and address are also shown.

DENTAL HEALTH SECTION NOMINATIONS

Chairman:	Donald J. Galagan, D.D.S., Washington, D. C.
Vice-Chairman:	Carl L. Sebelius, D.D.S., Nashville, Tenn.
Secretary:	David F. Striffler, D.D.S., Santa Fe, N. M.
Member of Section Council, 5-year term:	Linwood G. Grace, D.D.S., Harrisburg, Pa.
Member of Association Nominating Committee for Elective Councilors:	Walter J. Pelton, D.D.S., Washington, D. C.
Member of Association Standing Committee on Eligibility, 2-year term:	John T. Fulton, D.D.S., Chapel Hill, N. C.

(The present Section Secretary is Donald J. Galagan, D.D.S., Public Health Service, Washington 25, D. C.)

ENGINEERING AND SANITATION SECTION NOMINATIONS

Chairman:	Clarence I. Sterling, Jr., Boston, Mass.
Vice-Chairman:	William C. Gibson, M.P.H., Ann Arbor, Mich.
Secretary:	James A. King, M.P.H., Atlanta, Ga.
Member of Section Council, 5-year term:	A. Harry Bliss, M.P.H., Los Angeles, Calif.
Member of Association Nominating Committee for Elective Councilors:	Mark D. Hollis, C.E., Washington, D. C.
Member of Association Standing Committee on Eligibility, 2-year term:	Herbert J. Dunsmore, Pittsburgh, Pa.

(The present Section Secretary is William C. Gibson, University of Michigan School of Public Health, Ann Arbor, Mich.)

EPIDEMIOLOGY SECTION NOMINATIONS

Chairman:	E. Gurney Clark, M.D., New York, N. Y.
Vice-Chairman:	Ross L. Gauld, M.D., Washington, D. C.
Secretary:	Arthur C. Hollister, Jr., M.D., Berkeley, Calif.
Member of Section Council, 5-year term:	Sidney Cobb, M.D., Pittsburgh, Pa.
Member of Association Nominating Committee for Elective Councilors:	Alexander G. Gilliam, M.D., Bethesda, Md.
Member of Association Standing Committee on Eligibility, 2-year term:	William C. Reeves, Ph.D., Berkeley, Calif.

(The present Section Secretary is Thomas D. Dublin, M.D., National Institutes of Health, Bethesda 14, Md.)

FOOD AND NUTRITION SECTION NOMINATIONS

Chairman:	Helen E. Walsh, Berkeley, Calif.
Vice-Chairman:	M. Thomas Bartram, Ph.D., Washington, D. C. Franklin C. Bing, Ph.D., Chicago, Ill.
Secretary:	Dorothy M. Youland, Washington, D. C.
Member of Section Council, 5-year term:	Ruth E. Brennan, Clayton, Mo. Elizabeth K. Caso, Cambridge, Mass.
Member of Association Nominating Committee for Elective Councilors:	Lois B. Earl, Washington, D. C. Izola F. Williams, Columbus, Ohio
Member of Association Standing Committee on Eligibility, 2-year term:	Adelia M. Beeuwkes, Ann Arbor, Mich. Carl S. Pederson, Ph.D., Geneva, N. Y.

(The present Section Secretary is Dorothy M. Youland, Public Health Service, Washington 25, D. C.)

HEALTH OFFICERS SECTION NOMINATIONS

Chairman:	Robert E. Coker, Jr., M.D., Chapel Hill, N. C.
Vice-Chairman:	John J. Hanlon, M.D., Philadelphia, Pa.
Secretary:	Harold M. Graning, M.D., New York, N. Y.
Member of Section Council, 5-year term:	Emil E. Palmquist, M.D., San Francisco, Calif.
Member of Association Nominating Committee for Elective Councilors:	Ellis D. Sox, M.D., San Francisco, Calif.

(The present Section Secretary is Robert E. Coker, Jr., M.D., University of North Carolina, Chapel Hill, N. C.)

LABORATORY SECTION NOMINATIONS

Chairman:	F. Wellington Gilcreas, Gainesville, Fla.
Vice-Chairman:	Albert V. Hardy, M.D., Jacksonville, Fla.
Secretary:	Erwin Neter, M.D., Buffalo, N. Y.
Member of Section Council, 5-year term:	Howard L. Bodily, Ph.D., Berkeley, Calif.
Member of Association Nominating Committee for Elective Councilors:	Elizabeth D. Robinton, Ph.D., Northampton, Mass.
Member of Association Standing Committee on Eligibility, 2-year term:	Paul W. Kabler, M.D., Cincinnati, Ohio

(The present Section Secretary is Albert V. Hardy, M.D., P. O. Box 210, Jacksonville, Fla.)

MATERNAL AND CHILD HEALTH SECTION NOMINATIONS

Chairman:	Arthur J. Lesser, M.D., Washington, D. C.
Vice-Chairman:	Edward R. Schlesinger, M.D., Albany, N. Y.
Secretary:	Helen M. Wallace, M.D., Minneapolis, Minn.
Secretary-Elect:	Alice D. Chenoweth-Pate, M.D., Washington, D. C.
Member of Section Council, 5-year term:	Hilla Sheriff, M.D., Columbia, S. C.
Member of Association Nominating Committee for Elective Councilors:	Francis V. Corrigan, M.D., Providence, R. I.

(The present Section Secretary is Helen M. Wallace, M.D., University of Minnesota School of Public Health, Minneapolis 14, Minn.)

MEDICAL CARE SECTION NOMINATIONS

Chairman:	George A. Silver, M.D., New York, N. Y.
Vice-Chairman:	James O'H. Brindle, Detroit, Mich.
Secretary:	Leslie A. Falk, M.D., Pittsburgh, Pa.
Member of Section Council, 5-year term:	Mildred C. J. Pfeiffer, M.D., Harrisburg, Pa.
Member of Association Nominating Committee for Elective Councilors:	Dean W. Roberts, M.D., Chicago, Ill.
Member of Association Standing Committee on Eligibility, 2-year term:	William L. Fleming, M.D., Chapel Hill, N. C.

(The present Section Secretary is Leslie A. Falk, M.D., Empire Bldg., Pittsburgh, Pa.)

MENTAL HEALTH SECTION NOMINATIONS

Chairman:	Joseph Zubin, Ph.D., New York, N. Y.
Vice-Chairman:	Henry C. Schumacher, M.D., Gainesville, Fla.
Secretary:	Alan D. Miller, M.D., Denver, Colo.
Member of Section Council, 5-year term:	Rema Lapouse, M.D., Buffalo, N. Y.

(The present Section Secretary is Rema Lapouse, M.D., 111 Irving Terrace, Kenmore 23, N. Y.)

OCCUPATIONAL HEALTH SECTION NOMINATIONS

Chairman:	Lewis J. Cralley, Ph.D., Cincinnati, Ohio
Vice-Chairman:	Seward Miller, M.D., Ann Arbor, Mich.
Secretary:	Mitchell R. Zavon, M.D., Cincinnati, Ohio
Member of Association Nominating Committee for Elective Councilors:	Herman Bennett, M.D., Poughkeepsie, N. Y.

(The present Section Secretary is Mitchell R. Zavon, M.D., Kettering Laboratory, Eden and Bethesda, Cincinnati 19, Ohio.)

PUBLIC HEALTH EDUCATION SECTION NOMINATIONS

Chairman:	Ralph H. Boatman, Jr., Ph.D., Chicago, Ill.
Vice-Chairman:	Betty W. Bond, Ph.D., Minneapolis, Minn.
Secretary:	M. Elizabeth Davis, Columbia, S. C. Ralph T. Fisher, Trenton, N. J. Lewis W. Andrews, Kansas City, Mo.
Secretary-Elect:	Pauline K. Matthis, New York, N. Y.
Member of Section Council, 5-year term:	Mayhew Derryberry, Ph.D., Washington, D. C. Levitte B. Mendel, Pittsburgh, Pa.
Member of Association Nominating Committee for Elective Councilors:	Ann W. Haynes, Berkeley, Calif. William Griffiths, Ph.D., Berkeley, Calif.
Member of Association Standing Committee on Eligibility, 2-year term:	R. Winfield Smith, Philadelphia, Pa.

(The present Section Secretary is M. Elizabeth Davis, Wade Hampton Office Bldg., Columbia, S. C.)

PUBLIC HEALTH NURSING SECTION NOMINATIONS

Chairman:	Agnes L. Fuller, R.N., New York, N. Y.
Vice-Chairman:	E. Alice Clark, R.N., Atlanta, Ga. Lucille E. Notter, R.N., Brooklyn, N. Y.
Secretary:	Jean Stair, R.N., New Haven, Conn. Jane B. Taylor, R.N., Minneapolis, Minn.
Member of Section Council, 5-year term:	Edna J. Brandt, R.N., Berkeley, Calif. Genevieve S. Jones, R.N., Chicago, Ill.
Member of Association Nominating Committee for Elective Councilors:	Eleanor E. Palmquist, R. N., Portland, Ore. Mary E. Parker, R.N., Albany, N. Y.

(The present Section Secretary is Agnes L. Fuller, R.N., Public Health Service, 42 Broadway, New York, N. Y.)

STATISTICS SECTION NOMINATIONS

Chairman:	Robert E. Serfling, Ph.D., Atlanta, Ga. Mortimer Spiegelman, New York, N. Y.
Vice-Chairman:	Robert D. Grove, Ph.D., Arlington, Va. Margaret E. Rice, Jackson, Miss.
Secretary:	Fay M. Hemphill, Ph.D., Ann Arbor, Mich. Sam Shapiro, New York, N. Y.
Member of Section Council, 5-year term:	Clyde A. Bridger, Springfield, Ill. Fraser Harris, Ottawa, Ont., Canada Albert P. Iskrant, Washington, D. C. Howard West, M.P.H., Alexandria, Va.
Member of Association Nominating Committee for Elective Councilors:	Paul M. Densen, D.Sc., New York, N. Y.

(The present Section Secretary is Robert D. Grove, Ph.D., 2114 N. Powhatan St., Arlington, Va.)

86th ANNUAL MEETING—OCTOBER 27–31, 1958

HOW TO MAKE HOTEL RESERVATIONS FOR THE ST. LOUIS MEETING

A HOUSING BUREAU will be operated by the St. Louis Convention Bureau. Since all requests for rooms will be handled in chronological order, you are urged to send in your reservation as quickly as possible on the form below.

HOTELS HOLDING ROOMS FOR THE APHA AND RATES*

Hotel	*Single*	*For Two Persons* — *Double Bed*	*Twin Beds*
Ambassador-Kingsway	$ 6.50-$ 9.00	$ 9.00-$14.00	$10.00-$14.00
Baltimore	3.50- 7.50	5.00- 9.00	6.00- 10.00
Bel Air Motor Hotel	8.00- 11.00	9.00- 15.00	10.00- 16.00
Chase	9.50- 13.00	13.00- 16.00	14.00- 17.00
Claridge	4.50- 8.00	6.50- 10.00	7.50- 12.00
Coronado	7.50- 12.00	9.50- 16.00	13.50- 16.00
DeSoto	4.00- 6.50	6.00- 7.50	8.00- 10.00
Lennox	6.50- 11.00	7.50- 11.00	11.00- 13.00
Mark Twain	6.00- 9.00	8.00- 10.50	10.00- 11.50
Mayfair	6.50- 11.00	7.50- 13.00	11.00- 12.00
Melbourne	6.25- 9.75	8.75- 10.75	11.50- 13.75
Park Plaza	11.00- 15.00	15.00- 17.00	15.00- 20.00
Sheraton-Jefferson	7.50- 10.50	10.50- 13.50	13.00- 17.00
Statler	7.00- 12.00	10.00- 14.00	11.50- 15.00
Warwick	4.50- 8.00	7.50- 10.00	8.50- 12.00

* Parlor Suites available in all these hotels. Rates on request.

HOTEL RESERVATION FORM

MAIL TO: Miss Shirley Woerner, Manager
Hotels Convention Reservation Bureau, APHA
911 Locust Street, Room 406
St. Louis 1, Mo.

.....1958
(Date)

Please make the following reservation:

Hotel .....First Choice

Hotel .....Second Choice

Hotel .....Third Choice

Single rooms are very scarce; please arrange for sharing if possible

Arrival 1958

Departure 1958

..... Single room(s) for ..... person(s). Rate $..... to $..... per room

..... Double Bedroom(s) for ..... person(s). Rate $..... to $..... per room

..... Twin Bedroom(s) for ..... person(s). Rate $..... to $..... per room

The names and addresses of all persons who will occupy the room(s) requested must be listed. Please be sure to indicate arrival and departure hours and dates. If you wish to cancel or make any change in your reservation, write to the Hotels Convention Reservation Bureau, and *NOT* the hotel to which you were assigned.

....

....

....

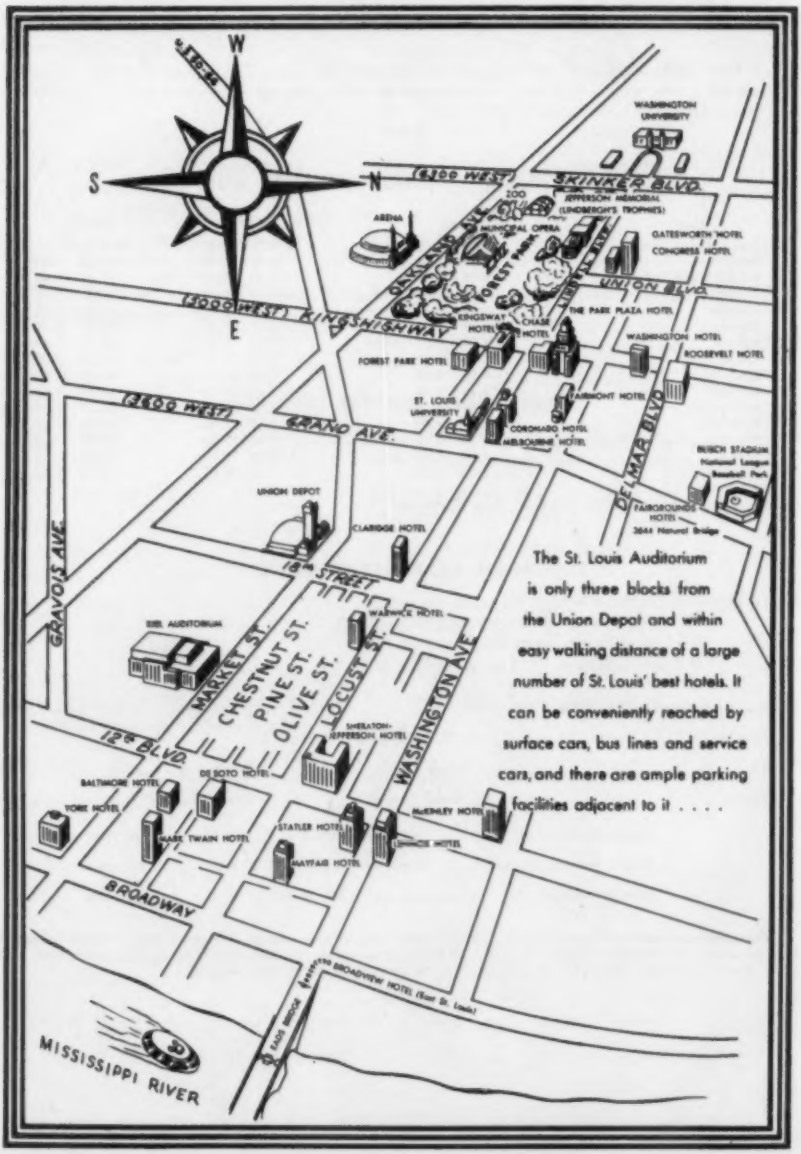
....

Name of Applicant .....

Street ..... City ....., ... Zone .... State .....

Note: You will receive confirmation direct from the hotel.

Map of Downtown St. Louis Showing the Location of Hotels and Kiel Auditorium



NEWS OF AFFILIATED SOCIETIES AND BRANCHES

APHA AFFILIATED SOCIETIES AND BRANCHES

SOCIETY AND SECRETARY

ALABAMA PUBLIC HEALTH ASSOCIATION, Norma L. Chandler, State Health Dept., Montgomery
ARIZONA PUBLIC HEALTH ASSOCIATION, Mrs. Verona Massey, State Dept. of Health, Phoenix
ARKANSAS PUBLIC HEALTH ASSOCIATION, Mrs. Vada Russell, State Health Dept. Bldg., Little Rock
CALIFORNIA, NORTHERN, PUBLIC HEALTH ASSOCIATION, Mrs. Dalrie S. Lichtenstiger, 130 Hays St., San Francisco, Calif.
CALIFORNIA, SOUTHERN, PUBLIC HEALTH ASSOCIATION, Byron O. Mork, M.D., University of California at Los Angeles, Los Angeles
COLORADO PUBLIC HEALTH ASSOCIATION, Alice Kops, Englewood, Colo.
CONNECTICUT PUBLIC HEALTH ASSOCIATION, E. Louise Ratcliff, M.P.H., Griffin Hospital, Derby
CUBAN PUBLIC HEALTH SOCIETY, Dr. Raphael Calvo Fonseca, Calle 19 No. 511 Altos Vedado, Havana
FLORIDA PUBLIC HEALTH ASSOCIATION, Nathan J. Schneider, Ph.D., P. O. Box 210, Jacksonville
GEORGIA PUBLIC HEALTH ASSOCIATION, Carl Fox, 33 Pryor St., N.E., Atlanta
IDAHO PUBLIC HEALTH ASSOCIATION, Wesley O. Young, D.M.D., P. O. Box 640, Boise
ILLINOIS PUBLIC HEALTH ASSOCIATION, William J. Hixon, Evanston Health Dept., Evanston
INDIANA PUBLIC HEALTH ASSOCIATION, Gale E. Coons, State Board of Health, Indianapolis
IOWA PUBLIC HEALTH ASSOCIATION, Mary L. Wombacher, State Dept. of Health, Des Moines
KANSAS PUBLIC HEALTH ASSOCIATION, Evelyn Ford, State Board of Health, State Office Bldg., Topeka
KENTUCKY PUBLIC HEALTH ASSOCIATION, Mrs. Rosalie Walters, 620 S. Third St., Louisville 2
LOUISIANA PUBLIC HEALTH ASSOCIATION, Andrew Hedmeg, M.D., State Dept. of Health, New Orleans 7
MASSACHUSETTS PUBLIC HEALTH ASSOCIATION, Mrs. Elizabeth K. Caso, Dept. of Health, Cambridge
MICHIGAN PUBLIC HEALTH ASSOCIATION, Maurice J. Mayer, 405 Hollister Bldg., Lansing
MINNESOTA PUBLIC HEALTH CONFERENCE, D. S. Fleming, M.D., State Dept. of Health, University Campus, Minneapolis
MISSISSIPPI PUBLIC HEALTH ASSOCIATION, H. E. Boone, P. O. Box 1700, Jackson
MISSOURI PUBLIC HEALTH ASSOCIATION, Mrs. Nadia Craver, 5th Fl., State Office Bldg., Jefferson City
MONTANA PUBLIC HEALTH ASSOCIATION, Elizabeth Bishop, M.D., P. O. Box 638, Hardin
NEBRASKA PUBLIC HEALTH ASSOCIATION, Orville D. DeFrain, Lincoln-Lancaster County Health Dept., Lincoln
NEW MEXICO PUBLIC HEALTH ASSOCIATION, Daniel T. Marley, P. O. Box 8066, Albuquerque
NEW YORK CITY, PUBLIC HEALTH ASSOCIATION OF, Allan Marlowe, 295 Flatbush Ave., Brooklyn 1
NEW YORK STATE PUBLIC HEALTH ASSOCIATION, Mrs. Kathleen Boland, State Dept. of Health, 84 Holland Ave., Albany
NORTH CAROLINA PUBLIC HEALTH ASSOCIATION, R. W. Brown, Bucombe County Health Dept., Asheville
NORTH DAKOTA PUBLIC HEALTH ASSOCIATION, Jean E. Norton, R.N., Box 133, Bismarck
OHIO PUBLIC HEALTH ASSOCIATION, Virginia Jones, Ohio Dept. of Health, Dayton
OKLAHOMA PUBLIC HEALTH ASSOCIATION, Marjorie Butler, 3400 North Eastern, Oklahoma City
OREGON PUBLIC HEALTH ASSOCIATION, Christie Corbett, R.N., State Board of Health, Portland
PENNSYLVANIA PUBLIC HEALTH ASSOCIATION, Robert H. Conn, 303 N. Second St., Harrisburg
PUERTO RICO PUBLIC HEALTH ASSOCIATION, Mrs. Virginia V. de Lara, Dept. of Health, San Juan 2
SOUTH CAROLINA PUBLIC HEALTH ASSOCIATION, Mrs. Laura M. DeMarse, State Health Dept., Columbia
SOUTH DAKOTA PUBLIC HEALTH ASSOCIATION, Alice Brady, R.N., State Dept. of Health, Pierre
TENNESSEE PUBLIC HEALTH ASSOCIATION, C. B. Tucker, M.D., State Dept. of Health, 420 Sixth Ave., N., Nashville
TEXAS PUBLIC HEALTH ASSOCIATION, Wayne H. Garrett, City Hall, Fort Worth
UTAH PUBLIC HEALTH ASSOCIATION, Mrs. Virginia Cole, City Health Dept., 115 S. State St., Salt Lake City
VIRGINIA PUBLIC HEALTH ASSOCIATION, William A. Dorsey, P. O. Box 2088, Richmond
WASHINGTON STATE PUBLIC HEALTH ASSOCIATION, Jack E. Mathews, State Dept. of Health, Smith Tower, Seattle
WEST VIRGINIA PUBLIC HEALTH ASSOCIATION, Paul B. Shanks, State Health Dept., Charleston
WISCONSIN ASSOCIATION FOR PUBLIC HEALTH, Paul Weis, 1 W. Wilson St., Madison
SOUTHERN BRANCH, A.P.H.A., Betty Ficquett, State Board of Health, Columbia, S. C.
WESTERN BRANCH, A.P.H.A., Mrs. L. Amy Darter, State Dept. of Health, 2151 Berkeley Way, Berkeley, Calif.

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Indiana Meeting Starts with a Tour

The unique element in the May 8–9 meeting of the Indiana Public Health Association in Indianapolis was that the opening half day was given to a tour of the city. Chief target of the tour was "a full-time local health department in action," the Public Health Division of the Indianapolis-Marion County Health and Hospital Corporation at which Henry G. Kester, M.D., health officer, played host. It will be remembered that this consolidated county department was created by legislative action a few years ago.

At the first session, presided over by President Betty Malinka, greetings of the American Public Health Association were brought by its executive secretary, Berwyn F. Mattison, M.D., who spoke on "Tuning in with the Times." This was followed by a symposium on the 1957

Indiana legislative acts and their effect on the state's health programs in the areas of nursing homes, poison control, immunization, and dairy activities.

Other general session discussions related to the need for trained personnel and to effective communication. Meeting jointly with IPHA, the Indiana Health Officers Association was concerned with the "Present and Future Problems of Local Health Departments." Speakers were the health officer of Shelby County, Wilson L. Dalton, M.D., and Robert O. Yoho, H.S.D., director of health education in the State Health Department.

Among the subjects of the half-day meetings of the various sections were: "The Fitness Dilemma," "Metropolitan Planning and Sanitation," and "Pending Legislation for Financing Nursing Education."

The association's award for outstanding contributions to public health, was presented at a luncheon meeting to Mrs. Meredith Nicholson, Jr., executive secretary of the Indianapolis Social Hygiene Association.

The more than 300 persons who attended this 12th annual meeting elected the following officers:

President—Robert O. Yoho, H.S.D., director, Bureau of Health Education Records and Statistics, State Board of Health

President-Elect—C. T. Mayfield, D.D.S., Kokemo

Vice-President—Hester Beth Bland, H.S.D., health educator, State Board of Health

Secretary—Gale E. Coons, health educator, State Board of Health

Treasurer and Representative to the APHA Governing Council—Samuel H. Hopper, Ph.D., Department of Public Health, Indiana University Medical Center

Students at Montana Meeting

The Montana Public Health Association met jointly with the Rural Health Section of the State Medical Association in Great Falls, May 1–2. A unique feature of the program, and one that supposedly has both recruitment and public relations overtones, was a panel in which a group of Great Falls high school students spoke on "What Public Health Means to Us." Another unique feature was that program participants with one exception were from Montana.

Perhaps as an answer to some of the students' questions, Donald A. Dukelow, M.D., consultant in health and fitness, American Medical Association, led a discussion on "Development of a Well-Rounded Health Program for the School Child." "Citizen Participation in a Sanitation Program," "Control of Alcoholism," "Industrial Hygiene," and "Nutrition in Chronic Disease" were other subjects.

Public health activities in the state were summarized in progress reports on several programs, such as public health nurse training, state mental hospital field service, and the rheumatic fever center, as well as the special health problems of the four local public health districts.

The president, Carl Hammer, M.D., health officer of Gallatin County, and the vice-president, Harriet Patterson of Polson, continue in office for another year. Newly elected for a two-year term were Elizabeth Bishop, M.D., health officer of the Big Horn-Rosebud Counties health district, as secretary, and Albert O. Dube, district sanitarian for Custer, Prairie, Richland, and Dawson counties as treasurer.

Arizona Meets with a Full House

At the 30th annual meeting in Globe of the Arizona Public Health Association, April 28–30, it is reported that nearly all of the more than 200 members attended at least some of the sessions. The keynote address was made by Charles A. Pigford, M.D., director of the Phoenix-Maricopa County Health Department. His thesis was that public health in Arizona grows in quality and breadth to just the extent that there

is effective intercommunication among the agencies involved. A further half-day session was devoted to this subject with a representative from each of seven state agencies with a primary or secondary involvement in health matters.

A panel on "Migrant Labor" brought together government, education, health, and labor and revealed divergent views on provision of health services and housing facilities for such workers.

A mental health panel opened the eyes of the public health people to the magnitude of problems of mental illness. County mental health clinics were suggested as a means for reducing hospitalization.

With the exception of the regional medical director of the Public Health Service, a representative of the U. S. Department of Labor, and two staff members of the Indian Area Health Office, each participant in the program represented native Arizona or Arizona agency talent.

On the lighter side, the annual banquet turned into a barbecue and dance in typical Western dress. As a souvenir each person received a piece of copper silicate, a turquoise color stone that is sometimes made into jewelry. Globe itself, where the meeting was held, is a copper mining town of some 7,000 people.

Elizabeth Serban, public health nurse, Pinal County, was the retiring president. New officers are:

President—Keith Maddy, D.V.M., veterinarian, C.D.C., Public Health Service

President-Elect—H. Gilbert Crecelius, Ph.D., director, Arizona State Laboratories

Vice-President—Betty R. Ord, R.N., director of nursing service, American Red Cross, Tucson

Secretary—Verona Massey, Bureau of Sanitation, Arizona State Department of Health

Treasurer—Patrick T. Kelsey, Phoenix-Maricopa County Health Department

Assistant Treasurer—Louis Ross, Phoenix-Maricopa County Health Department

More Health Survey Statistics

The latest of the preliminary reports from the National Health Survey concerns the number of persons injured in the United States. On the basis of interviews during a two-week period in the second half of 1957, it is estimated that in a six-month period 25 million persons were injured sufficiently to restrict their activities for at least a day or to need medical attention. The two age groups with the highest percentage of the total accidents were the 5–14 and 24–44 groups. For women, however, the highest percentages were in the 24–44 and 45–64 groups. Home accidents accounted for 40 per cent of the injuries; work accidents, 17 per cent; motor vehicle accidents, 10 per cent; all others, 33 per cent.

Also recently becoming available is "Origin and Program of the U. S. National Health Survey." This describes the development leading up to the National Health Survey Act (Public Law 652, 84th Congress). A statement of the policies and initial program of the survey is included, together with an analysis of the need for such data and a description of the types of inquiry to be carried out in making the study.

"Health Statistics," PHS Publication Nos. 584 B-3 and 584 A-1, Gov. Ptg. Office, Washington 25, D. C.; 25 cents and 30 cents, respectively.

EMPLOYMENT SERVICE

Annual Meeting Employment Service

An employment center will be located in the Scientific Exhibit area at the 86th Annual Meeting. See the official program and directional signs at the Meeting for exact location. The service will be sponsored by the Missouri State Employment Service and the Association. Professional personnel will be available to assist employers and employees. Vocational counseling will also be available. Binders containing copies of applications and position descriptions will be available for inspection by applicants and employers.

Employers and candidates are urged to file beforehand. This should be done through either your local state employment service office or the Association. The required forms will be available at both places. Filing by October 8 is necessary if records are to be forwarded to the Meeting. It will be possible to register at the Meeting also.

A conference room will be available at the center for use by employers and applicants. Early registration will facilitate appointment arrangements.

The following pages present information for those seeking public health personnel and for those seeking positions in public health. Other information concerning vacancies and personnel available is on file in the Association office. Anyone wishing to have the benefit of this additional information can obtain it by writing to the Vocational Counseling and Placement Service of the Association.

Advertising space in these pages is available at special rates for the use of employers or individuals. The charges are $5 for the first 50 words or fraction thereof and $1 for each additional 10 words or fraction thereof. There is no charge to members or Fellows of the Association who desire to utilize the **Positions Wanted** portion of these pages. **Closing date** for receipt of advertisements is the first of the month preceding the desired month of publication. **All correspondence should be sent to the American Public Health Association, 1790 Broadway, New York 19, N. Y.**

POSITIONS AVAILABLE

Residency in Public Health—Two-year Board-approved residency in well established health department in California. Salary $755 per month; maximum age 35 years; California license required. Apply **Box PH-81,** Employment Service, APHA.

The Idaho Department of Health offers outstanding opportunities for qualified **Public Health Physicians**—Four established and operating district health departments need full-time qualified medical directors. Positions are under State Merit System; entrance salaries are $935–$1,090 per month depending on qualifications. Idaho has a lot to offer: a growing program, plenty of fresh air with no smog, good year-round climate, easy access to best fishing and hunting in the west. Address inquiries to Dr. Terrell O. Carver, Administrator of Health, Statehouse, Boise, Idaho.

Wanted: **Physician-Virologist**—Licensed or eligible for license in New Jersey. To be in charge of program in virology and to assist director in other divisional programs. Must have broad background in microbiology. Salary $10,800–$13,800. Retirement, insurance benefits. Apply: Director, Division of Laboratories, New Jersey State Department of Health, State House, Trenton, N. J.

Child Psychiatrist—interested in academic career with opportunity to conduct a mental hygiene clinic for preschool children. Academic title and research opportunity with excellent salary. Three years' accredited residency in psychiatry, and at least two years' postresidence experience with one year minimum in child psychiatry. Apply Dr. S. Mouchly Small, School of Medicine, University of Buffalo, Buffalo 14, N. Y.

Public Health Physicians—Associate with a progressive and rapidly expanding public health program. Vacancies exist now with the Philadephia Department of Public Health. Salary ranges are from $9,126 to $16,508 annually, depending on level of position. Civil service benefits include liberal vacation and sick leave allowances, 13 paid holidays, and health, welfare, and pension plan. Typical positions are as follows: director of Disease Control Division, chief of Tuberculosis Control Section, or duties in the administration

of one of the city's ten health centers. General requirements: M.P.H. degree. Years of administrative experience required vary with level of job open. For further information, write Dr. John J. Hanlon, Director, Public Health Services, 519 City Hall Annex, Philadelphia 7, Pa.

Psychiatrist—Requires medical degree with specialty in psychiatry. Salary $13,104. Position with State Health Department, Denver, Colo. Write to Dalton Roberts, Chief, Administrative Services, Colorado State Department of Public Health, 420 State Office Bldg., Denver 2, Colo.

Psychiatric Social Worker—Requires master's degree with psychiatric sequence. Salary $442–$572. Position with State Health Department. Write to Dalton Roberts, Chief, Administrative Services, Colorado Department of Public Health, 420 State Office Bldg., Denver 2, Colo.

Wanted: **Health Officers** for local units in Florida—**Health Officer IV,** $11,040–$13,800; **Health Officer III,** $10,080–$12,600; **Health Officer II,** $9,120–$11,520; **Health Officer I,** $7,200–$9,120. Each applicant is rated on a basis of experience and training. Good state retirement plus Social Security; merit system protection; travel allowance ten cents per mile; 40-hour week; work in vacation surroundings. Apply to Wilson T. Sowder, M.D., State Health Officer, P. O. Box 210, Jacksonville 1, Fla.

Public Health Nurse—Opening for **Public Health Nurse II.** B.S. degree plus one year experience in established health department. Salary range $360 per month to $450 per month, plus liberal travel allowance. Nurses without experience and with degrees and public health training can qualify as Public Health Nurse II after one year employment. Write to J. H. White, M.D., Director, Weld County Health Department, P. O. Box 521, Greeley, Colo.

Public Health Nurses (salaries $335–$445) and **Graduate Nurses** ($275–$395)—for generalized public health nursing in New Mexico Department of Public Health. Opportunities for advancement, retirement plan, and other fringe benefits. Write Merit System Supervisor, Box 939, Santa Fe, N. M.

Public Health Nurses—Beginning salary $4,440. **Graduate Nurses**—Beginning salary $4,020. Five-day work week from 8:30 a.m. to 4:30 p.m. Four weeks' vacation, 11 holidays, 12 days' sick leave annually. Pension plan. Generalized public health nursing agency founded by Lillian D. Wald. Ongoing inservice education program. Four universities offer opportunities for study at all levels. Some scholarship assistance available. For information, write or call Personnel Office, Visiting Nurse Service of New York, 107 East 70th St., New York 21, N. Y. Telephone Lehigh 5-1100.

Public Health Educator II—Initiate and develop school-community health education programs. Desirable qualifications: formal training and experience in public health; sound working knowledge of principles of education and methods of teaching; $5,424–$6,504 per year. Travel allowance, vacation, sick leave, retirement benefits, group insurance plans. Write Dr. Amy L. Hunter, Director, Bureau of Maternal and Child Health, Wisconsin State Board of Health, Madison 2, Wis.

Regional Nutritionist—to carry out a generalized program of consultative services to county health units. Minimum requirements are a bachelor's degree, approved dietetic internship, and two years' experience in public health or a related field. Current salary range is $4,800–$6,000, plus good travel allowance, state retirement, and Social Security. Apply to Marjorie M. Morrison, Florida State Board of Health, P. O. Box 210, Jacksonville 1, Fla.

Sanitarian—to accept responsible position with a growing health department. Excellent chance to gain supervisory and training experience. Minimum experience and training qualifications: Three years of professional experience in the field of public health sanitation; and graduation from a four-year college or university with specialization in engineering, agriculture, chemistry, entomology, bacteriology, zoology, veterinary science or a combination of these fields. (A year of graduate work in the field of public health or sanitary engineering may be substituted for two of the required three years of experience.) Salary range $400–$450 per month plus liberal fringe benefits. Write Martin W. Ericson, Director of Sanitation, Room 103, City Hall, St. Joseph, Mo.

Public Health Statistician—Must have master's degree in public health statistics and two years' experience or an equivalent combination of training and experience. Salary range $460–$575. Starting salary dependent upon training and experience. Write to Personnel Officer, Florida State Board of Health, P. O. Box 210, Jacksonville, Fla.

Assistant Director of Public Health—$909–$1,105. M.D. and M.P.H. required plus one year rotating hospital internship and two years in a public health department, one of which was in administrative capacity. **Public Health Medical Officer**—$866–$1,052. M.D. required and one year rotating hospital internship. Must have or be eligible for California license to practice medicine. **Microbiologist**—$417–$460. Must have or be eligible for California microbiologist's certificate. Paid vacation and sick leave, part-paid health insurance, other benefits. County Personnel, 236 Third St., San Benardino, Calif.

SANITARIAN

Foreign Employment

Degree in sanitary sciences, sanitary engineering and/or master's degree in public health plus 3–5 years' experience in the sanitary field. For Company operations in Saudi Arabia. Starting salary $945 per month.

Write giving full particulars regarding personal history and work experience.

Recruiting Supervisor, Box 284

ARABIAN AMERICAN OIL COMPANY

505 PARK AVENUE
NEW YORK 22, NEW YORK

Public Health Physicians—for overseas employment. Salary range $9,000–$15,000 plus housing and other allowances where applicable. Minimum qualifications are formal training or experience in public health, preferably both for top-level positions. Assignments will be for a minimum of two years. Write Public Health Division, Box 100, International Cooperation Administration, Washington 25, D. C.

Health Director—for growing county of 65,000 located adjacent to Kansas City, Mo. Modern health center recently completed. Three-year-old department with excellent opportunity for program development. Public health degree with some experience required. Salary open. Make application to Edward H. Fischer, M.D., 306 E. 21st Ave., North Kansas City, Mo.

Associate Medical Director—in Chicago office of the Division of Services for Crippled Children, which is a unit of the University of Illinois. Administrative responsibilities in directing the State Crippled Children's Program in 11 counties surrounding Chicago, Ill. Joint appointment on faculty of the College of Medicine available for part-time teaching, research, or clinical activity. Good retirement system. Experience and training in pediatrics or public health desirable. Eligibility for licensure in Illinois required. Salary open, subject to qualifications of the applicant. Apply to Herbert R. Kobes, M.D., Director, Division of Services for Crippled Children, 1105 S. Sixth St., Springfield, Ill.

Public Health Physician—Director of Public Health in Portland, Maine, community of 80,000 and center of metropolitan area of about 150,000. Department staff of 37 engaged in progressive public health program including active housing inspection and enforcement of minimum housing standards and environmental sanitation. Council-Manager form of government since 1923. Health department enjoys excellent relationships with private and voluntary agencies, and a real civic interest in public health matters exists. Health department budget for 1958 totals $155,307. Portland offers an unparalleled opportunity for pleasant living. A sea coast city, yet it is within easy driving distance of mountains, lakes, rivers, and forests, which provide excellent year-round recreational facilities. All of the cultural, educational, and recreational centers of New England are within two hours' flying time or a day's drive. An up-to-date public school system offers excellent elementary and secondary educational advantages. Degrees in medicine and public health required. Salary $11,537 to $13,937, retirement, vacation, sick leave, group life insurance. Travel expense for local travel and attendance at professional conferences provided. Write Julian H. Orr, City Manager, City Hall, Portland, Maine.

Medical Health Officer—for a two-county area in the Upper Peninsula of Michigan. Good personnel policies and vacation. Salary range $13,500–$15,000, according to qualifications and experience. Total population of area 56,000. Counties border on Lake Michigan. For further information write to Delta Menominee District Health Department, Webster Annex, Escanaba, Mich.

District Health Officer, Wisconsin—Two positions. Headquarters Rhinelander and Fond du Lac. M.P.H. degree and eligibility for license to practice medicine in Wisconsin required. Salary $10,464–$14,484, commensurate with experience. Write E. H. Jorris, M.D., Assistant State Health Officer, 400 State Office Bldg., Madison 2, Wis.

Senior Community Mental Health Representative and **Community Mental Health Representative**—New York State Department of Mental Hygiene. Vacancies in Albany, New York City, and Rochester. Salary ranges: $9,220–$11,050, and $7,130–$8,660. Senior Representative supervises state-wide community mental health program, trains and supervises professional staff. Representative assists and advises local authorities in development of mental health facilities. Requirements: Either (a) 60 graduate semester hours in psychology or (b) 30 hours plus one year experience in clinical psychology or (c) MSW or (d) two years' graduate training in social work and for Senior Representative, five years' experience in mental health field including one year in a psychiatric treatment service, and three years in an administrative, supervisory or consulting capacity. For Representative

these minima are three years, one year, and one year respectively. Both positions also require one more year of work experience or graduate training. Examination date October 18; applications will be accepted as long as testing arrangements for candidates can be made. Write Recruitment Unit, Box 4, The State Campus, Albany 1, N. Y.

Physician or Non-M.D.—with experience in group medicine or medical care plan administration for director of large medical group, New York City. **Box PH-85,** Employment Service, APHA.

Medical Officer—Salary range $906–$1,133. To serve as a medical assistant to the superintendent of field service with primary responsibility in maternal and child health programs. Requires eligibility for license or license to practice medicine in California and either accredited M.S. degree in public health or two or more years' hospital residency training, either in public health or related fields. Contact Civil Service Commission, County of San Mateo, Courthouse, Redwood City, Calif.

Director, Local Health Services, Wisconsin—Work with the state health officer and professional staff in improvement of local health services. M.P.H. degree and eligibility for license to practice medicine in Wisconsin required. Salary $10,464–$14,484, commensurate with experience. Write E. H. Jorris, M.D., Assistant State Health Officer, 400 State Office Bldg., Madison 2, Wis.

Sanitary Engineers—for overseas employment. Salary range: $8,000–$13,000, plus housing and other allowances where applicable. Qualifications include degree in sanitary engineering or public health for subordinate positions, plus appropriate experience for greater responsibility. Assignments will be for a minimum of two years. Write Public Health Division, Box 100, International Cooperation Administration, Washington 25, D. C.

Public Health Microbiologist—California certificate required. Salary range $378–$461; starting salary dependent on experience and qualifications. For details write I. D. Litwack, M.D., Long Beach Department of Public Health, 2655 Pine Ave., Long Beach 6, Calif.

Public Health Nurses—Immediate openings in county health department, generalized nursing program. Will consider graduate nurses who have had public health nursing experience. Must have California driver's license. Salary range: Public Health Nurses, $351–$439; Junior Public Health Nurses, $314–$392. Apply to Charles W. Folsom, M.D., M.P.H., Health Officer, Tulare County Health Department, P. O. Box 110, Visalia, Calif.

Public Health Nurse—Missouri State Crippled Children's Service. Vacancy in Columbia. One year each required in education and experience in public health. Apply Merit System Supervisor, M.S.C.C.S., Student Health Center, University of Missouri, Columbia, Mo.

Public Health Nurse Supervisor—Excellent opportunity. Liberal personnel policies. Salary range: $4,600–$5,980. Generalized program, including rehabilitation, industry, nursery schools, parents' classes, crippled children's clinics. Highly industrialized and agricultural community in southeast central Pennsylvania, 50 miles from Baltimore, 90 miles from Philadelphia and Washington. Write Director, Visiting Nurse Association, 218 E. Market St., York, Pa.

Clinical Social Worker—Instructor on faculty, University of Maryland Medical School, Department of Pediatrics, Diagnostic and Rehabilitation Center for Handicapped Children, to provide social work services in multidisciplinary setting and to participate in the education of students in the health professions. Required: M.S.W.; two years' experience under qualified supervision. Beginning salary $5,400. Social Security and retirement. Miss Lillian M. Snyder, Director, Department of Social Work, University Hospital, University of Maryland, Baltimore 1, Md.

POSITIONS WANTED

On Box Numbers, Address APHA at 1790 Broadway, New York 19, N. Y.

Public Health Dentist—with graduate studies, including M.P.H. degree, experience in general hospital, and wide practical experience in public health. Seeks opportunity with progressive program or in research. **Box D-19,** Employment Service, APHA.

Administrator, M.P.H.—Ten years' experience in public health including work as administrator, health educator, sanitarian, and sanitation consultant. B.S. in sanitary science, M.P.H. in administration. Desires challenging position in administration. **Box C-39,** Employment Service, APHA.

Microbiologist—Ph.D., 31. Four years graduate assistant, three years teaching assistant undergraduate and graduate levels, research, publications. Desires teaching and/or research. Evansville College, B.A. (biology), 1950. Purdue University, M.S. (microbiology, minor in chemistry), 1953, Ph.D. 1958. Write **Box L-63,** Employment Service, APHA.

Health Educator—Male. B.S. in health education; M.S.P.H. Three years' public health education experience, five years' medical sales and advertising administrative experience. Desires executive or teaching position. **Box HE-90,** Employment Service, APHA.

—ALLEGHENY COUNTY HEALTH DEPARTMENT—

In serving a progressive community, the expanding program of one of the nation's largest local health departments makes available the following positions. All positions under merit system. Excellent personnel policies and generous travel plan. Qualified candidates may be offered opportunity for affiliation with the Graduate School of Public Health, University of Pittsburgh.

CHIEF, DIVISION OF BIOSTATISTICS—$10,500 per Year

To plan and direct the processing of mortality and natality data, analysis of data, population estimates, publication of data. Direct the statistical program pertaining to service statistics arising from the activities of health department personnel in the various divisions and from the departmental clinical services.

Minimum Requirements: (1) Master's degree with statistics as major field and courses in the biological or social sciences or master's degree in mathematics, physical science, or social sciences, plus graduate work in statistics. (2) Six years' experience in professional statistical work, including two years' experience in an administrative or supervisory capacity, plus knowledge of automatic data processing.

DISTRICT HEALTH OFFICER—$13,500–$15,000

To develop and administer a comprehensive program of public health services in a county district of approximately 300,000 people.

Minimum Requirements: Graduation from an accredited school of medicine with a degree of doctor of medicine, plus an M.P.H.; eligibility for licensure in Pennsylvania; eligibility for certification by the American Board of Preventive Medicine and Public Health. Four years' experience in responsible positions in the field of public health.

CHIEF, BUREAU OF MENTAL HEALTH—(Salary open)

To develop and administer a comprehensive program of preventive mental health service within the Health Department. A highly responsible professional medical position.

Minimum Requirements: Five years of experience in responsible positions in the field of mental health, including two years in the supervisor's position in a public health agency which provided generalized public health service. Graduation from an accredited school of medicine with a degree of doctor of medicine and certification by the American Board of Psychiatry and Neurology. Licensed to practice medicine in the Commonwealth of Pennsylvania or eligibility for such licensure.

CHIEF, DIVISION OF DISEASE CONTROL—$13,500–$15,000

To administer a major phase of a county-wide public health program in the field of epidemiology. Responsibility for recommending policies relating to the chronic disease program and for coordination of the work supervised with that of the total county health program.

Minimum Requirements: Graduation with a doctor of medicine degree and completion of one year of internship. Possess an M.P.H. degree and have three years' experience in epidemiology and at least five years of experience in an administrative capacity in the field of public health. License to practice medicine in the Commonwealth of Pennsylvania or eligibility for such licensure.

For further information, please write to Personnel Section, Allegheny County Health Department, 651 City-County Building, Pittsburgh 19, Pa.

—ALLEGHENY COUNTY HEALTH DEPARTMENT—

In serving a progressive community, the expanding program of one of the nation's largest local health departments makes available the following positions. All positions under merit system. Excellent personnel policies and generous travel plan. Qualified candidates may be offered opportunity for affiliation with the Graduate School of Public Health, University of Pittsburgh.

PUBLIC HEALTH ENGINEER V (HOUSING)—$9,000–$11,000

To plan, organize, and direct a housing program on a county-wide basis.

Minimum Requirements: Five years' progressive professional experience in public health engineering, including three years in a supervisory or administrative capacity in a public health agency. B.S. in engineering, preferably with a major in public health engineering, sanitary engineering, or civil engineering with a sanitary option. Possess an M.P.H. degree or M.S. degree in public health sanitary science or engineering, or any equivalent combination of experience and training.

HEALTH EDUCATOR—(Salary open)

Participates in the planning, development, and carrying out of a health education program on a district basis, designed to meet the individual needs of neighborhoods and communities within Allegheny County. Work includes generalized public health educational responsibilities.

Minimum Requirements: (1) An M.P.H. with a specialty in health education from an accredited graduate school of public health. (2) Desirable but not required: one year of experience after graduate training in community health education with an official or voluntary agency.

INSTITUTIONAL NUTRITIONIST—$5,350 per Year

To provide consultation service to institutions for children, the aged, the convalescent, the chronically ill, nursing homes, and other institutions on food service, menu planning, purchasing, budgeting, and personnel management.

Requirements: B.S. degree with a major in foods and nutrition, plus a dietetic internship in an accredited hospital course. At least two years' experience in a hospital or other institution in the past five years in an administrative capacity.

For further information, please write to Personnel Section, Allegheny County Health Department, 651 City-County Building, Pittsburgh 19, Pa.

Commercial Advertisements

All communications on the following commercial advertisements should be sent to Burneice Larson, Medical Bureau, Suite 605, 900 North Michigan Avenue, Chicago 11, Ill.

OPPORTUNITIES AVAILABLE

(a) County health officer; preferably one well qualified in public relations $1,000–$1,200; California. (b) Public health physician to organize and direct new county health department; resort area; East. (c) Public health nurse to serve as executive director, VNA; would be responsible for administration of entire program; report to Board of Directors; town 80,000 near New York City; $5,000–$6,600. (d) Chief for combined county public health department and VNA; West Coast; $8,700. (e) School nurse; employed by board of education, town of 150,000 near Chicago; $4,200 to $7,200. (f) Health educator; considerable travel through two counties; headquarters in university city of 400,000; East. (g) Sanitarian; degree in sanitary sciences, public health or engineering, three years' experience required; foreign operations, major industrial company; $10,000 to $12,000.

OPPORTUNITIES WANTED

(a) Public health and medical administrator; has had distinguished career; currently in charge of important study project which will be completed soon. (b) Health educator; B.S., M.S., M.P.H.; three years, chief bacteriologist, state department of health; three years, health educator, county health and tuberculosis association.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

OCCUPATIONAL OUTLOOK HANDBOOK—Employment Information on Major Occupations for Use in Guidance (3rd ed., Bull. No. 1215)—By U. S. Department of Labor, Bureau of Labor Statistics. Washington, D. C.: Gov. Ptg. Office, 1957. 697 pp. Price, $4.00.

As one who was intimately involved in the creation and compilations of the Health Careers Guidebook, published in 1955 by the National Health Council, this reviewer can have only admiration for the over-all excellence of this 1957 edition of the Occupational Outlook Handbook. It is a worthy successor to the earlier editions.

For these very reasons, however, its rather considerable weaknesses in the health field are the more surprising. Only 14 occupations (including "chiropractor," not in the Health Careers Guidebook) are presented in the "Health Services Occupations" section. These are heavily in the hospital area and public health fields are almost totally ignored. In fact, in that section's introductory paragraphs appears the following sentence, quoted in its entirety: "Workers in the health field are employed in a wide variety of places, including hospitals, sanitariums, clinics, laboratories, pharmacies, industrial plants, offices private practitioners and patients' homes." Apparently the compilers were not sufficiently aware of the range and extent of opportunities in official and voluntary public health agencies. Minor references in a few occupational descriptions serve to underscore this weakness in the handbook.

Throughout the handbook, but outside the "Health Services Occupation" section are scattered about 60 additional references to occupations which we would clearly identify with health. These are not, however, particularly extensive references, nor is the material presented of particular usefulness. About twenty health occupations have been omitted, including such important areas as hospital administrator, public health statistician, sanitarian, public health educator, speech and hearing therapist. Obviously all 150-plus health occupations could not be embraced by our over-all volume, such as in this handbook, but one could expect a more sensitive selection.

It is to be hoped that the next edition of the Occupational Outlook Handbook will be both more reasonably complete and more helpfully organized, with recognition of the vital role of the health occupations in public health undertakings.

HOWARD ENNES

THE SELECTED WRITINGS OF MARVIN PIERCE RUCKER AND COMPLETE BIBLIOGRAPHY OF HIS WORKS. Richmond, Va.: Marvin Pierce Rucker Memorial Association, Richmond Academy of Medicine (1200 East Clay St.), 1958. 198 pp. Price, $7.50, $25.00 for memorial edition.

Shortly after the death of Dr. M. Pierce Rucker, the staff of the Department of Public Health, Richmond, Va., recommended to the Board of Health that a suitable memorial be established in his memory. Dr. Rucker had supported the community's health program during his lifetime; he was instrumental in establishing the first prenatal clinic for indigent mothers in Richmond, and from 1946 to his death in 1953 had been a member and then chairman of the Richmond Board of Health. For 10 years he edited the "Virginia Medical Monthly" and during this period published a series of short biographies of physicians, as well as 118 brief accounts of various flowers and shrubs named for physicians or other scientists. The entire series of "Pen Profiles and Floral Eponyms" has now been published as a

memorial in the volume listed above. The proceeds from the sale of the volume are to be used to establish a scholarship fund to train public health workers. The volume is a fine example of bookmaking, in terms of design, printing, and binding. The biographies concern numerous outstanding contributors to public health, among them Edward Jenner, Alphonse Laveran, Ronald Ross, Wade Hampton Frost, Walter Reed, William Crawford Gorgas, Joseph Goldberger, and Howard Taylor Ricketts. All the articles are well written and many contain information not easily available. This is an interesting volume for browsing and reading for pleasure.

GEORGE ROSEN

FREE TAPES, SCRIPTS AND TRANSACTIONS (206 pp. Price, $5.75, 1958).
FREE SLIDEFILMS (204 pp. Price, $5.00, 1957).
ELEMENTARY TEACHERS GUIDE TO FREE CURRICULUM MATERIALS (319 pp. Price, $5.50, 1957).
Randolph, Wis.: Educators Progress Service.

There are very few things these days that are free, but this does not seem to hold true when it comes to educational materials. These three paperback books provide educators with teaching materials on topics ranging from the ABC's of spice cookery to the zinc industry. Interspersed is a sizable quantity of materials which can be used profitably by health workers—health educators, nurses, nutritionists, parent educators, home economists, and others.

Do you know that the Communicable Disease Center in Atlanta, Ga., has produced scores of sound and silent slidefilms which are for use in professional training in the fields of health, medicine, and allied sciences? There are far too many subjects to mention, but whatever your field of interest, some are definitely worth knowing about. Do you happen to need a chart of an ear, an eye, a heart, a foot? A letter with a three-cent postage stamp will solve your problem if you know where to write.

These recent, annually revised editions bring the users of educational aids up to date on hundreds of items, a large proportion of them new within the year. Well written annotations give clear-cut descriptions, dates of release, running time, conditions of loan, and other important details. However, they are not evaluative and, needless to say, critical inspection should be a prerequisite to the use of any audiovisual aid. These catalogues have the merit of being comprehensive, which creates a problem of selection; there is the chaff to be separated from the wheat.

Well organized title, subject, and source indexes each on paper of different color make these reference works easy to use. The source index not only serves the obvious purpose of knowing where to write for something, but also may indicate to some extent the quality of an item. Materials from government agencies, state health departments, and many voluntary agencies, for example, are likely to contain more authentic material; while aids from business concerns and trade associations may have their unique shortcomings.

Teachers on the elementary and junior high school levels will find a wealth of materials in all four volumes. For public health workers, however, the guide on films and the guide on slidefilms are likely to prove the most useful; both contain a wide variety of materials on many levels.

Although it is nice to get something free, it would be a mistake to overlook the vast amount of good materials available at low cost which are included in other catalogues. JOSEPH KADISH

HEALTH TEACHING IN SCHOOLS—By Ruth E. Grout (3rd ed.). Philadelphia, Pa.: W. B. Saunders. 359 pp. Price, $4.75.

This text is an excellent book for teachers and prospective teachers in ele-

mentary and secondary schools. In the early chapters the reader is acquainted with the background of a program of school health education. Topics that deal with the needs of the child, the nature of the community, and with current educational concepts and practices set the stage for suggestions about the classroom program. These suggestions are contained in chapters devoted to planning for the program and in proposals for guides to health teaching at the elementary and secondary school levels.

Supplementary teaching aids are found in chapters about audiovisual aids and about evaluation of the program. Valuable information for the teacher is available in another chapter that indicates how the schools can work effectively with other community agencies concerned with child health. The appendix contains useful information about sources of material and suggestions concerning teaching about alcohol, tobacco, and narcotic drugs. There is also a section arranged under the heading, "Suggested Experiences and Content," which is devoted to elementary public health.

This text is thoroughly up to date in educational theory and practice. It is also noticeably free of educational jargon. For the teacher or the school administrator who wishes to improve his health teaching program it will prove to be useful. It is a very useful text as the author intended it should be.

HERBERT WALKER

PREVENTIVE AND CORRECTIVE PHYSICAL EDUCATION—By George T. Stafford and Ellen Davis Kelly (3rd. ed.). New York, N. Y.: Ronald Press (15 E. 26th Street), 1958. 395 pp. Price, $5.00.

The third edition of this standard text has maintained the high quality of its predecessors. Students, teachers, and therapists in the fields of adapted physical education, physical therapy, recreational therapy, and physical education administration will find the book extremely valuable. The emphasis is upon the place and utility of exercise in general and exercises in particular in such conditions as nutritional disturbances, cardiac dysfunctions, trunk, foot and other postural deviations, and a miscellany of other conditions including arthritis, poliomyelitis, cerebral palsy, and menstrual disturbances. Chapters have been added discussing the contemporary emphasis on "fitness" and the "team" concept in rehabilitation and there is an all too brief section on school programming and administration. The volume is well illustrated and compactly written. It is distinctly the product of experienced and skilled workmen in the field and the educational and scientific data are presented in a wholly usable form.

DELBERT OBERTEUFFER

HEATING, VENTILATING, AIR CONDITIONING GUIDE: 1958. New York, N. Y.: American Society of Heating and Air Conditioning Engineers (62 Worth St.), 1958. 53 chapters, 1,272 pp. 503 pp. of catalogue data. Price, $12.00.

The 1958 edition of this book carries forward for the 36th consecutive year the important function of providing an up-to-date compendium of useful data, design standards, and descriptions of modern equipment related to the treatment of indoor air. The current volume takes note of significant advances in knowledge, standards, and practice in such diverse fields as the control of air contaminants, the performance and testing of air cleaners, the calculation of costs of electric heating, and the design of industrial exhaust systems.

One could wish, however, for a modernization in the bibliography of many chapters. For example, relatively few of the references are dated after 1950. The table on winter climatic conditions (pp. 263–268) contains data for United States stations only through 1947. The

chapter on Air Conditioning in Prevention and Treatment of Disease appears to be based almost entirely on research and investigations carried on a decade or more ago, and takes no account of the impressive work that has been done on the germ-free environment.

In spite of these and other soft spots, any health department library worthy of the name should have an up-to-date edition of this useful guide. It is an especially useful tool for those health workers whose primary concern is with the hygiene of housing, industrial hygiene, air sanitation, and hospital administration. M. ALLEN POND

ADVENTURES IN MEDICAL EDUCATION—By C. Canby Robinson. A Commonwealth Fund Book. Cambridge, Mass.: Harvard University Press, 1957. 338 pp. Price, $5.00.

This book is a short story which deals with the development of medical education as the author saw it unfold in his own life as student, teacher, physician and administrator. He was particularly fortunate to have been in the places where the men who made medical history in America were working during that exciting period which stretched from the days of Osler to the complex operations of the modern medical center. For this reviewer the account takes on an especially delightful flavor, for he spent his own boyhood and early youth in Nashville and the Ohio Valley, preceded the author to Peking Union Medical College, and then returned to a large eastern medical center for his professional career. Scores of the characters which left indelible impressions on Canby Robinson and enliven this drama of medical education have also touched his life. It is therefore difficult to review the book objectively from the standpoint of one who has not himself been caught up in the story.

For the lay reader, this book should provide an understanding of how university medical education developed and then spread from the East to the Ohio Valley, the Middle West and the South. The author has drawn heavily on earlier historical treatises to lay the foundation for his own experiences in these areas. All in all a delightful, interesting, and informative story and by one who added his own significant contributions.

AURA E. SEVERINGHAUS

MEDICINE AND MAN: THE STORY OF THE ART AND SCIENCE OF HEALING—By Ritchie Calder. New York, N. Y.: New American Library (501 Madison Ave.), 1958. 256 pp. Paperback Mentor Book. Price, $.50. (Also available in cloth binding from George Allen and Unwin Ltd., London, England.)

This book, a concise history of the healing arts, gives a vivid account of man's unending quest for health and longevity. It presents in readable form a popular account of medical progress, from the primitive rituals of the witch doctor and priest-physician to the miracle drugs and complex surgery of recent times.

Written in an engaging style, Medicine and Man, tells how man slowly and painfully found his way to medical knowledge. This knowledge often came from unusual sources—Egyptian embalmers, Greek sculptors, Roman gladiators, executed criminals, a village wisewoman, and a country milkmaid. Dedicated workers in science such as Vesalius, Harvey, Jenner, Pasteur, Roentgen, Fleming, and Salk pushed forward the frontiers, opening the vast potential of modern medicine. The evolution of medicine, moreover, includes many curiosities and lucky accidents—some of which the author duly acknowledges.

Ritchie Calder, science editor of the London News Chronicle, has written an interesting story of medical progress—from shamman to atomic scientist. A nontechnical volume it will be read with interest by doctor and patient alike.

FRED B. ROGERS

DIAGNOSIS AND TREATMENT OF DISEASES IN THE TROPICS—By H. C. Trowell (3rd ed.). Baltimore, Md.: Williams and Wilkins (Mt. Royal and Guilford Avenues), 1956. 332 pp. Price, $3.75.

This is a handbook of 326 short (five and a half by three inches) pages written for health assistants in Africa. There is no doubt that it meets a need. It evokes a problem that has beset the thinking of medical educators in underdeveloped countries for a long, long time—how can one create the large number of physicians needed for adequate disease prevention and patient care in places where high school education is inadequate? This problem is usually solved by training a few full-fledged medical doctors and giving them the assistance of as many local medical helpers as possible. It is for those students that the book is intended.

It is divided into five chapters: Introduction, Surgical Diseases, Medical Diseases, Special Diseases (including VD, yaws, eye and ear diseases, malnutrition, and children's development), Drugs and Prescriptions.

The text is clear and simple, the essentials are adequately selected and presented; the only criticism one could level at such a book is that it makes all the medical field appear so simple and easy that it may lead the rather superficially educated reader to believe that there is nothing more to medicine than what he finds in the book.

JACQUES M. MAY

THE EXTENT OF CANCER ILLNESS IN THE UNITED STATES—By the Biometry Branch of the National Cancer Institute, National Institutes of Health, PHS Publ. No. 547. Washington, D. C.: Gov. Ptg. Office, 1958. 23 pp. Price, $.25.

In this recently published booklet the National Cancer Institute succeeds in coping, within the limited space of 23 pages, with the difficult problem of informing wide groups of professional people on the complex and comprehensive matter of the extent of cancer illness. This is possible since the topics are selected wisely, stated clearly, and presented simply both in text and in charts and tables. Public health workers, particularly health educators, will benefit from this booklet just as much as medically trained persons.

For their presentation, the authors selected the simple device of question and answer. Of the total 31 questions, 12 cover cancer mortality, starting with the basic inquiry as to the importance of cancer as cause of death, 10 cancer incidence, particularly among various sociodemographic groups, and eight selected aspects of diagnosis and treatment. The final question deals with the much discussed problem as to increase in average length of life if cancer could be eliminated as a cause of death.

This publication fills a definite gap and will, therefore, be welcome by those who look for concise and reliable answers to these often asked questions.

MARTA FRAENKEL

FOLK MEDICINE—VERMONT DOCTOR'S GUIDE TO GOOD HEALTH—By D. C. Jarvis. New York: Henry Holt (383 Madison Avenue), 1958. 182 pp. Price, $2.95.

Vermont's folk medicine is used by the author only as a background for his own personal theory about what makes for good health and long life. Being 77 years old, he has a good right to do so. Declaring himself as training product of "organized medicine," he had to make himself familiar with the indigenous medicine of his home state in order to be accepted by his rural patients.

Dr. Jarvis's main concern is with the replenishing of the mineral needs of the body by "two teaspoons full of honey and two teaspoons full of apple cider vinegar taken in a glass of water one or more times each day." This prescription is surely an over simplification of a multifacet problem, especially when it becomes a kind of cure-all for the

many human and animal ills, including sterility.

What Dr. Jarvis attributes as being specifically Vermontish is going on in other rural mountain sections of the United States.

The book has its merits in being an individual case history of a lifetime experience in rural medical practice. His listing of 53 varieties of leaves regularly eaten by Vermonters is good source material. We hope that his correspondence of a study group, carried on for 20 years with 50 physicans, will be made public.

This book is good reading material for health educators and physicians, but is not recommended for lay readers.

BRUNO GEBHARD

GUIDE TO CAREER INFORMATION—Career Information Service, New York Life Insurance Company. New York: Harper (49 East 33rd Street), 1957. 203 pp. Price, $3.00.

Designated as a source book of occupational information by the Career Information Service of the New York Life Insurance Company, which prepared it in the fall of 1957, "Guide to Career Information" is essentially an annotated bibliography. More than 800 recent books and pamphlets about occupations and career planning, subsumed under 52 categories or occupational "families," are listed. Entries, arranged alphabetically by titles within vocational groupings, include a concise description of the content of each item, its length, reader level, cost, and source. Names and addresses of organizations offering further information conclude each grouping.

By careful design, occupations geared to various degrees of ability and those appealing to diverse interests are represented: professional, skilled, unskilled, government, and public service. For those finding it difficult to make a choice there is a section on career guidance. There is also material on planning for a job while at college, as well as on job opportunities for those without a college degree or even a high school diploma.

Major consideration has been given by the several career counseling and occupational information specialists who have contributed to this book—among them Dr. John H. Cornehlsen and Dr. Sarah Splaver—to culling from the vast number of available publications those which are not more than five years old and meet professional standards of accuracy and completeness of information.

Students in junior and senior high school and in college, parents, teachers, counselors, and librarians will find this guide a resource to which they will turn again and again. An index and system of cross-references enhance the convenience of this volume, sturdily bound, set in large type, and generously spaced

FRANCES E. NEDERBURG

HEALTH IN CALIFORNIA—Summary of the California Health Survey of 1954–1955. Sacramento, Calif.: California State Printing Office, Documents Section (North Seventh Street and Richards Boulevard), 1958. 96 pp. Price, $1.50.

This is a report of results of the California Health Survey of 1954–1955. This was a state-wide survey in which morbidity and related population information was obtained by interviews conducted with persons in a sample of about 10,000 households.

It is a well balanced and statistically sound report which is attractively presented. The major part of the report pertains to survey findings on the health status of the population and its utilization of health services. The data are valuable in establishing needed measures of health and medical care to guide health department activities. The measures of health reported include estimates of illness incidence by broad and detailed diagnostic groupings and whether or not it was disabling, and estimates

of the prevalence of illness according to the number of persons affected and the resulting number of disability days. The measures of medical care reported include estimates of hospital admissions and hospital days and physician visits by broad diagnostic detail. Analyses relate patterns of health and medical care to the demographic characteristics of the population.

Due consideration is given to questions of the quality of data both in the presentation and interpretation of survey findings. The report presents detailed estimates of sampling and nonsampling errors based on results of methodological investigations conducted in conjunction with the survey. The report also contains a chapter that briefly describes the major demographic characteristics of the California population and a chapter that illustrates the uses of the survey findings which have been made by various programs in the State Department of Public Health.

The report will be of considerable interest to persons in public health and related fields from the viewpoint of the survey findings themselves, of the uses of these findings in public health programs, and of the problems of measuring health and medical care by conducting sickness surveys.

MONROE SIRKEN

THE IMPACT OF THE ANTIBIOTICS ON MEDICINE AND SOCIETY. Monograph II—Institute of Social and Historical Medicine—By Iago Gladston. New York: International Universities Press (227 West 13th Street), 1958. 222 pp. Price, $5.00.

The volume consists of 14 essays by as many authors on topics related to the antibiotics. Some of the articles deal specifically with antibiotics, such as the part played by industry in building up production since 1943, the impact of antibiotics on the change in concepts and practices of public health, the application of the antibiotics to the livestock industry and to plant husbandry and the role of antibiotics in the clinical practice of medicine. In a charming essay on the last topic Alvarez indicates that while the antibiotics have assisted in the wiping out of many diseases they have also helped to keep alive many idiots who would otherwise have died of pneumonia and other infections in childhood.

Some of the essays are only tangentially related to antibiotics. Among these are Waksman's discussion of the microbiology of the soil, and Dauer's informative analysis of recent changes in mortality, morbidity, and age distribution of our population.

A few of the contributions appear to have no relationship to antibiotics. They are, rather, philosophic essays related to medicine. Among these are Rappleye's discussion of industry's relation to medical research and education and Ginzberg's essay on the hospital and the community.

The monograph of 222 pages is edited by Iago Galdston for the Institute of Social and Historical Medicine of the New York Academy of Medicine. It makes pleasant reading but lacks cohesiveness. MORRIS GREENBERG

AN INTERNATIONAL NOMENCLATURE OF YAWS LESIONS—By C. J. Hackett. World Health Organization, Geneva. New York: Columbia University Press (2960 Broadway), 1957. 103 pp. Price, $4.00.

It is refreshing to have at last a streamlined description of yaws lesions. Dr. Hackett and his group have rendered a real service to the profession in cleaning up the linguistic debris of many decades of confusion. The book gives first a glossary of terms defining dermatological expressions currently used in yaws clinical descriptions. A short résumé of the course of the disease follows, and does away with such misleading terms as "primary, secondary, and tertiary yaws." The use of the simpler

and more honest terms "early" and "late" yaws is recommended. The lesions are then described and presented in clear, concise table form. Finally, pages 21 to 96 illustrate the terms used through an impressive array of black and white photographs. A select bibliography follows. This is a useful book to all interested in the diseases of the tropics. JACQUES M. MAY

INTRODUCTORY SOCIOLOGY—By Paul H. Landis. New York: Ronald Press (15 East 26th Street), 1958. 726 pp. Price, $6.50.

Among the growing list of sociological texts available today, Landis' contribution should be regarded as a strong addition. It offers those unfamiliar with the field a broad spectrum of theory, research and application to whet their appetites. Roughly one-fifth of the book consists of a primer on the concept and applications of culture. Nearly a third is devoted to an analysis of the structure and organization of society and social groupings. There follow discussions of the self, social control and various social institutions.

As a basic text aimed at the beginning student it serves its purpose well, although one might raise issue with the brief treatment accorded the concept of role and the limited discussion of the implications of social stratification. Positively, the book demonstrates the modern sociologist's vast arena of interests, the pan-human and multinational scope of his perspectives, and the diversity of his technic of investigation. For those already familiar with the sociologist and his approach the book will have insufficient depth in any one area. The detailed suggested readings should be a useful source of references. In brief, this text represents a good beginning for those wishing to acquaint themselves with the concerns of sociology as a field of learning. BERNARD KUTNER

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ANALYSIS OF DREAMS, THE. Medard Boss. New York: Philosophical Library, 1958. 223 pp. Price, $6.00.

BILHARZIASIS. Bulletin of the World Health Organization, Vol. 18, No. 5-6. Emile Abdel Malek, et al. New York: Columbia University Press, 1958. Pp. 685–1118.

CEREBRAL-PALSIED CHILD. A Guide for Parents. Winthrop M. Phelps, et al. New York: Simon and Schuster, 1958. 237 pp. Price, $3.95.

COMMEMORATION—50TH ANNIVERSARY OF THE FOUNDING OF MEDICAL SOCIAL SERVICE AT THE MASSACHUSETTS GENERAL HOSPITAL, BOSTON, OCTOBER 1905. Selected Papers and Reports Presented During the Celebration October 20–22, 1955. Boston, Mass.: Social Service Department, Massachusetts General Hospital, 1958. 245 pp. Price, $2.25.

CONFIDENTIALITY IN SOCIAL SERVICES TO INDIVIDUALS. New York: National Social Welfare Assembly, 1958. 48 pp. Price, $.50.

COST OF SOCIAL SECURITY, 1949–1954, THE. International Labour Office. New York: International Labour Office, 1958. 201 pp. Price, $3.00.

DANGER IN THE AIR. Oliver Stewart. New York: Philosophical Library, 1958. 194 pp. Price, $6.00.

EMOTIONAL DYNAMICS AND GROUP CULTURE. Dorothy Stock and Herbert Thelen. New York: New York University Press, 1958. 296 pp. Price, $6.00.

EPILEPSY—WHAT IT IS, WHAT TO DO ABOUT IT. Tracy J. Putnam. Philadelphia, Pa.: Lippincott, 1958. 190 pp. Price, $1.25.

FOOD GUIDE AND QUANTITY COOKING FOR YOUNG CHILDREN. The Community Council of Greater New York. New York: Harper, 1958. 189 pp. Price, $4.95.

HOSPITAL STUDY OF THE DAYTON STANDARD METROPOLITAN AREA. John R. McGibony, et al. Dayton, Ohio: Dayton Area Chamber of Commerce, 1958. 193 pp.

HOW TO WRITE SCIENTIFIC AND TECHNICAL PAPERS. Sam F. Trelease. Baltimore, Md.: Williams & Wilkins, 1958. 185 pp. Price, $3.25.

HUMAN BLOOD IN NEW YORK CITY. A Study of Its Procurement, Distribution and Utilization. H. D. Kruse. New York: New York Academy of Medicine, 1958. 147 pp.

INTERDISCIPLINARY TEAM RESEARCH: METHODS AND PROBLEMS. Margaret Barron Luszki. New York: New York University Press, 1958. 355 pp. Price, $6.00.

JUVENILE DELINQUENCY. Edited by Joseph S. Roucek. New York: Philosophical Library, 1958. 370 pp. Price, $10.00.

LEPTOSPIROSIS IN MAN AND ANIMALS. J. M. Alston, et al. Baltimore, Md.: Williams & Wilkins, 1958. 367 pp. Price, $8.50.

LIVING WITH YOUR ALLERGY. Samuel M. Feinberg. Philadelphia, Pa.: Lippincott, 1958. 190 pp. Price, $1.25.

MANUAL FOR NUTRITION SURVEYS. Interdepartmental Committee on Nutrition for National Defense. Washington, D. C.: Gov. Ptg. Office, 1958. 160 pp. Price, $1.50.

MEDICAL ASSISTANT, THE. Miriam Bredow. New York: McGraw-Hill, 1958. 430 pp. Price, $7.50.

NEW APPROACH TO THE CONQUEST OF CANCER, RHEUMATIC AND HEART DISEASES, A. Howard H. Beard. New York: Pageant Press, 1958. 225 pp. Price, $5.00.

NUCLEAR MAGNETIC RESONANCE. Otto v. St. Whitelock, Editor. New York: New York Academy of Sciences, Vol. 70, Art. 4, 1958. pp. 763–930.

NUTRITION FOR PRACTICAL NURSES. Phillys S. Howe (2nd ed.). Philadelphia, Pa.: Saunders, 1958. 219 pp. Price, $2.75.

POPULATION OF JAPAN, THE. Irene B. Taeuber. Princeton, N. J.: Princeton University Press, 1958. 461 pp. Price, $15.00.

PRINCIPLES OF INTERNAL MEDICINE (3rd ed.). T. R. Harrison, et al. New York: McGraw-Hill, 1958. 1782 pp. Price, $18.50.

PSYCHIATRIC RESEARCH REPORTS No. 9—RESEARCH IN PSYCHIATRY WITH SPECIAL REFERENCE TO DRUG THERAPHY. Nathan S. Kline, et al., Editors. Washington, D. C.: American Psychiatric Association, 1958. 181 pp. Price, $2.00.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

Raymond S. Patterson, Ph.D., F.A.P.H.A.

Cancer Mortality — Up's and Down's—Among a very large group of life insurance policy holders (mostly urban) the age-adjusted cancer death rate for white females, under 75, decreased 15 per cent between 1936–1940 and 1952–1955. Males experienced an increase similarly of 8 per cent. The death rate among males exceeded that of females. There was a marked decrease in deaths from cancer of the (female) genital organs, but not of the breast. Respiratory cancer was the chief cause of male mortality increase. There are many more findings here of interest to all.

ANON. Trends in Cancer Mortality. Statist. Bull. Metrop. Life Insur. Co. 39, 5:3 (June), 1958.

Well Organized Britain—Apart from the several professional societies of medical officers of health (male and

female) and the Royal Society of Health, there are a baker's dozen of representative associations of other professional workers in the health field in England. There are also forty odd national associations or institutes that assist in varying degrees in the programs of the MOH. All have prepared descriptive notes on their activities, which may prove of interest in comparison with our galaxy of professional societies and preventive/promotional organizations.

ANON. Health Department Workers and Their Associations. M. Officer 100, 1:8 (July 4), 1958.

Completeness of Medical Services—Since the last (big) war the costs of prepaid medical and hospital care have risen faster than both consumer incomes and cost of living indexes. Current problems in raising standards of health care within the economic framework of public ability to pay are serious, but better public understanding of the insurance principles involved may help a lot to resolve most of the problems, says the writer.

BECKER, H. The Public's Stake in Health Insurance. Nursing Outlook 6, 7:394 (July), 1958.

Pool Sanitation—This general discussion of the public health aspects of swimming pool operation establishes these factors as essential to decent maintenance: a cooperative reporting system of bathers' health; better sanitary planning of new pool construction; training of operators; and consultation on swimming safety practices. Commended reading.

BLISS, A. H., AND STEINMETZ, W. H. Health Service Responsibilities for College and University Swimming Pool Operations. Sanitarian 21, 1:14 (July–Aug.), 1958.

All Pitched In—The story of the means employed to induce 62 per cent of Salt Lake City and County residents to be protected against poliomyelitis is well worth your hearing. More than four times as many vaccinations were given by practicing physicians as by public clinics, leading the narrator to the conclusion that mass clinics do not take patients from private physicians' offices.

BOWES, J. E. Poliomyelitis Vaccination Campaign in Salt Lake City, Utah. Pub. Health Rep. 73, 6:520 (June), 1958.

Suburban Sewage—Population increase is being absorbed chiefly in fringe areas of metropolitan centers and thereby hangs a crushing sanitary and a critical economic problem. In certain favored areas, and under the best possible conditions of soil drainage, a septic tank system can be a satisfactory method of domestic sewage disposal. In other situations the method is far from sanitary. It is always a poor temporary method and its usefulness decreases as the size of the establishment it serves increases.

COULTER, J. B. The Septic Tank System in Suburbia. Pub. Health Rep. 73, 6:488 (June), 1958.

Old Folks at Home—Ninety-five elderly persons were interviewed at length about their ideas concerning available medical services, current health practices, and their information about their health. They considered health of importance chiefly because ill-health would interfere with daily living and their independence. The respondents expressed little concern about preventive medical care other than such meager services as they were currently accepting. More findings were recorded and all are worth your consideration.

DICICCO, L., AND APPLE, D. Health Needs and Opinions of Older Adults. Pub. Health Rep. 73, 6:479 (June), 1958.

Cancer Studies—Say the special editors, "we feel that this symposium provides an enlightening picture of the present status of cancer research and,

perhaps, insight into its future course. . . . We believe that these reviews will be of interest not only to those engaged specifically in cancer research but also to the community of medical scientists at large." The papers more than fulfill this modest promise—the last two papers being of most concern to us in the general public health field.

FARBER, S., et al. Cancer (12 papers). J. Chronic Dis. 8, 1:1 (July), 1958.

Most Liked It—This is "a plain, unvarnished account of what some British doctors and British patients told an American (professor) who was trying to learn all he could about their nation-wide system of medical care." If you are fixed in your opinion of the iniquities of "socialized medicine," or are completely sold on the virtures of comprehensive prepaid medical care, this paper will mean little to you. If you aren't sure, then by all means look it up. Asked if they were getting satisfactory medical care, 91 per cent of the patients interviewed said "yes." And, on the whole, the British medical attitude was found to be "one of restrained optimism."

GEMMILL, P. F. An American Report on the National Health Service. Brit. M. J. 5087:17 (Supplement July 5, 1958) (also) The British Health Service Today. New England J. Med. 259, 1:19 (July 3), 1958.

To the North of Us—Discussed at a meeting of the Canadian Public Health Association (Atlantic Branch) was the question of our responsibility in matters of preventing lung cancer via health education. Dissemination of established fact, encouragement of moderation in smoking, substitution of pipe or cigars by habitual smokers, and (hopefully) persuading youngsters not to smoke, were the methods explored.

GODDEN, J. O. The Prevention of Carcinoma of the Lung. Canad. J. Pub. Health 49, 6:232 (June), 1958.

The Smallpox Dead—In America this comes under the head of hygienic curiosa. It is a discussion about disposal of bodies of persons dying of smallpox. Most of the British health officers questioned seemed to think that cremation was a reasonably safe disposal method—but not Glasgow. There it was not permitted, because infective material might escape with the flue gases. Some of the protective and disinfective practices for getting the bodies safely in caskets and into the ground seem reminiscent, somehow, of past sanitary rites almost beyond recall.

HUDSON, J. H. Disposal of Smallpox Dead. M. Officer 99, 26:379 (June 27), 1958.

Rubella and Girls—An editorial in the same issue with this paper says, "The suggestion of Krugman and Ward that all women in the first trimester of pregnancy with no previous history of rubella be given at least 20 ml. of gamma globulin as soon as possible after exposure will hardly be questioned." The risk of congenital malformations and the difficult question of therapeutic abortion are briefly considered. The article recommends anew the deliberate exposure of all young girls to rubella.

KRUGMAN, S., AND WARD, R. Rubella. New England J. Med. 259, 1:17 (July 3), 1958.

Educating Educators—An entire issue of this unique and eminently useful journal is given over to the topics of educating educators and keeping them educated. The special needs of preservice and inservice training are pointed up by writers from a half dozen countries. Editorially this comment is offered, "The doctor and the general can bury their mistakes: the health educator is constantly being haunted by the old-wives' ghosts he may have had a hand in creating."

PARISOT, J., et al. Training for Health Education (12 papers). Health Ed. J. 16, 2:57 (May), 1958.

Cold and Colds—An extensive (two-part) and scholarly review of possible relationships between cold, or smog, or crowding and colds seems to produce no revolutionary findings, but the lecturer comments on many British studies not widely known on this side of the water. It is the sort of gathering in of ideas that makes for useful reference.

REID, D. D. Environmental Factors in Respiratory Disease. Lancet 7033 and 7034: 1237 (June 14 and 28), 1958.

Should Be Useful—This historical and descriptive picture of a provincial department of health is the first of a planned series outlining the development and current status of public health administration in Canada. When the series is complete it is hoped that it can be published in a bound volume, a fitting successor to a similar enterprise published just two decades ago. It cannot help but be of importance to planners and historians hereabouts.

ROTH, F. B., AND DEFRIES, R. D. The Saskatchewan Department of Public Health. Canad. J. Pub. Health 49, 7:276 (July), 1958.

"Medicine and . . ."—The 75th Anniversary issue of the Journal of the American Medical Association features a series of congratulatory articles from leaders in such fields as business and industry, communications and education, establishing the contributions of medicine and the particular field of the writer to over-all American progress. Public health administration appears not to be one of the collaborative fields included, nevertheless our readers will still find much of immediate interest in this excellent series.

SMITH, A. Partners in Progress. J.A.M.A. 167, 11:1315 (July 12), 1958.

If additional information is desired regarding the articles listed in this bibliography, please communicate directly with the publications in which they appeared; the addresses are furnished for your convenience.

Canad. J. Pub. Health (Canadian Journal of Public Health), 150 College St., Toronto 5, Canada.
Health Ed. J. (Health Education Journal), Tavistock House, Tavistock Sq., London, W.C. 1, England.
J.A.M.A. (Journal of the American Medical Association), 535 N. Dearborn St., Chicago, Ill.
J. Chronic Dis. (Journal of Chronic Diseases), C. V. Mosby, 3207 Washington Blvd., St. Louis, Mo.
Lancet, 7 Adam St., Adelphi, London, W.C. 2, England.
M. Officer (Medical Officer), Chronicle House, 72–78 Fleet St., London, E.C. 4, England.
New England J. Med. (New England Journal of Medicine), Massachusetts Medical Society, 8 The Fenway, Boston 15, Mass.
Nursing Outlook, American Journal of Nursing Company, 2 Park Ave., New York 16, N. Y.
Pub. Health Rep. (Public Health Reports), Gov. Ptg. Office, Washington, D. C.
Sanitarian (National Association of Sanitarians), 1256 West 7th St., Los Angeles 14, Calif.
Statist. Bull. Metrop. Life Insur. Co. (Statistical Bulletin Metropolitan Life Insurance Company), One Madison Avenue, New York 10, N. Y.

CREDIT LINES

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

Keeping in Touch with Your Public

"Of Mutual Interest," first appearing in June, 1958, is described as "a periodic report to business and industry on activities at the University of Pennsylvania." Among its articles are "Executive Health Exams Spread." Such examinations are seen as the key to efficiency, since industry's "biggest investment is in top management personnel." The University Diagnostic Clinic has now been providing periodic health examinations for business, industrial, and professional executives for five years. In collaboration is a research program supported by the W. K. Kellogg Foundation through which an evaluation of the service is being made.

Here also is an article on "Corporate Giving Soars," perhaps to inspire more giving by corporations. At any rate business support to higher education is reported to have risen from 68 million dollars in 1951 to 110 million in 1957. Hard by this one is an article on the 100 million dollar program of developing new facilities in which the university is engaged.

Might a similar report to business from health officials help the public to understand public health, and, with understanding, support?

"Of Mutual Concern" is published at the university's public relations office, 201 South 34th St., Philadelphia 4.

Little League Baseball—Questions—

"How High-Pressure Sports Can Hurt," by John Kord Lagemann, points out the dangers of highly competitive sports for youngsters under 12, maybe under 16. These sports are Little League baseball, Pop Warner Conference football, Biddy and Iddy Biddy basketball.

Physicians and educators, says the author, who have seen the results think it is time that parents take a sober second look at the sport programs of their local school and community to decide which are likely to benefit and which to hurt children under 16. A simple test for parents "Can he laugh while he plays?" "If he can, don't worry."

A Chicago pediatrician, John L. Reichert, M.D., reporting to the 1957 annual meeting of the American Medical Association, pointed out that adolescents and preadolescents are in a vulnerable age, particularly susceptible to dislocation of joints and bone injuries. Many authorities believe violent and sustained exercise and the bruises and fatigue of strenuous competition throw a damaging overload on the immature heart, lungs, or kidneys, the effects of which may appear weeks or years later. Nor is the danger physical only; there may be a profound effect on a child's emotional development as a result of the strong emotional reactions to the highly competitive atmosphere.

Part of the difficulties arise from exploitation—parents to enjoy glory vicariously, league officials for community prestige, merchants to advertise the town.

The article appears in Redbook, July, 1958, 230 Park Ave., New York 17, or on newsstands.

Free Films for Every Purpose

The 1958 and 18th annual edition of "Educator's Guide to Free Films" has just been published. In the health and social hygiene field this edition lists 230

films, 32 of which are new to this edition. In addition, 76 films on accident prevention and safety are listed. In the 19 years of the volume it has grown from 102 pages and 671 films to 616 pages and 4,013 films. Currently, the films are classified under 30 subjects, ranging from seven films in entertainment to 406 in history. More than 200 films are available for agriculture, consumer education, geography of the United States, industrial arts, general science, social problems, and sports.

Educator's Progress Service, Randolph, Wis., $7.

A Community Hearing Program

"Hearing Loss—A Community Loss" is a detailed guide for setting up community health hearing programs and rehabilitation of the hearing handicapped. Intended for any one with interest "in helping a deaf friend or relative or in planning a community-wide hearing program" the guide is divided into three main subjects. The community responsibility section "tells something about the hearing handicapped" and the social and emotional difficulties they face and what each citizen can do toward restoring them to productive lives.

Framework for a Community Program proposes a practical and flexible program of rehabilitation services based on existing facilities. Services for a Community Program emphasizes the prevention of deafness and conservation of hearing and the need for coordinated efforts of all specialists involved and the family in achieving total rehabilitation.

The guide is the work of several committees, the members of which "over several decades have dedicated their lives to the hearing handicapped" and who "possess that indispensable gift—the ability to communicate intimately with their readers."

The editor is Margaret Lane Washington of the American Hearing Society staff. The guidebook was made possible by a grant from the Office of Vocational Rehabilitation. A limited number of copies are available free from the American Hearing Society, 1800 H St., N.W., Washington 6, D. C.

Health and Schools

"The Report of the Sixth National Conference on Physicians and Schools" has been published and is being distributed by the American Medical Association. In two parts, the report contains the 10 group reports of the conference on as many subjects related to school health, as well as the proceedings of the general sessions, the reports of six state or county medical society activities, and the school health activities of professional associations. Among the last-named is the American Public Health Association for which Elena Sliepcevich, chairman of the School Health Section, reported.

Fringe Area Aids

"Urban Fringe Sanitation—A Selected Bibliography" has been prepared to meet the needs of the busy administrator for valuable references without wading through the multitude of articles that have been published recently. One hundred selections were made from more than 2,000 publications reviewed. The bibliography should provide the background for the answers to many of the new sanitary engineering problems which have arisen from the rapid growth of cities. The solutions to these are complex because of the interwoven technical, administrative, economic, and legal aspects. The selections are divided into sections on water supply, sewerage, refuse, and planning. Gov. Ptg. Office, Washington 25, D. C.; 15 cents.

Many the Uses of a Birth Certificate

By way of painless education of both doctors and parents to report births, the Cleveland Health Department is distributing a form for this purpose. "Why Do I Need a Birth Certificate?" is the question asked by one baby and answered by two others. The answers are standard and include the furnishing of information on which the health department plans its child health programs. J. Glen Smith, M.D., is the commissioner of health, Cleveland, Ohio.

Teaching at Home by Telephone

"How to Teach Shut-In Students by Telephone," a brief 24-page pamphlet, is a description of the Executone School-to-Home telephone system. Intended for teachers, administrators, and physicians it contains suggestions for homebound and hospitalized students.

The Executone System consists of two telephones, one in the home of the handicapped, one in the classroom, which are connected through the local telephone exchange system. A directional microphone in the first picks up only voices spoken directly into it. The other, a portable, has a nondirectional microphone that picks up any sound in the classroom. Thus the student is intimately involved in whatever goes on in the classroom.

Information in the booklet is based on study of hundreds of cases of use of the device and on interviews with administrators, special educators, class and home teachers, physicians, and parents. A 26-member educational advisory committee guided the study. Among them was Jayne Shover, associate director of the National Society for Crippled Children and Adults and a member of the Health Education Section, American Public Health Association.

The booklet, describing a resource that should be known to public health workers, is available from local telephone companies or the Special Education Division of Executone, 415 Lexington Ave., New York 17, N. Y.

Hancock Pamphlets in New Dress

The Health Education Service of the John Hancock Mutual Life Insurance Company, earlier known as the Life Conservation Service, has three new additions to its series of health education booklets. Actually, they are extensive revisions of booklets available in the early fifties. They have been rewritten and printed in new colors and with new illustrations. They are "From One to Five," "From Six to Twelve," and "Tuberculosis." They can be had for the asking from the company, 200 Berkeley St., Boston 17, Mass.

Worth Acquiring

"The Dental Service Corporation: A New Approach to Dental Care" has been prepared by the Division of Dental Resources of the Public Health Service, with the cooperation of the Washington State Dental Service Corporation. Nearly half the text is devoted to a description of the organization and operation of the latter agency. The remainder is given to the planning of a dental service corporation—legal problems, tax exemption, the contract, administration program costs, statistical analysis.

Appendixes, longer than either of the other two items, give the text of the agreement, the articles of incorporation, the by-laws, the participating dentists' agreement, and schedule of fees of the Washington group, as guidance for those planning similar services.

PHS Publication No. 570, Gov. Ptg. Office, Washington, D. C. No charge indicated.

"Sources of Information and Unusual Services" is described as "a guide to information, pamphlets, and services available from agencies in the United

States, arranged by subject." One of its five main subjects is "Health, Welfare, and Education" which includes some rather remote subheads such as carpets, festivals, real estate, savings and loan associations, stocks and bonds, along with many more relevant ones.

This fifth edition has 200 new entries of a total of about 1,000. Information Directory Company, 200 W. 57th St., New York, N. Y.; $2.50.

"The Research Attack Against Cerebral Palsy" is a booklet by the National Institute of Neurological Diseases and Blindness which describes the nature of cerebral palsy and the institute's research program in this field. The pamphlet describes a collaborative field investigation in which 14 medical research centers are now working with the institute. Since recent animal research indicates that a lack of oxygen and other adverse conditions during pregnancy and delivery are underlying factors in cerebral palsy, some 40,000 expectant mothers and their infants will be studied over a period of five years. Whenever possible mothers will be studied during the entire period of pregnancy. The exact relationship of certain unfavorable factors present from conception through early childhood to cerebral palsy will be studied with the long-range aims of new treatment technics, new leads as to nature and cause, new diagnostic methods, and prevention.

The booklet also describes the institute and its growth during its eight years of life. It outlines the types of grant programs: research grants, research fellowships, graduate medical training grants, and special traineeship awards.

PHS Publication No. 552. Single copies free from National Institute of Neurological Diseases and Blindness, Bethesda 14, Md. Purchase from Gov. Ptg. Office, Washington, D. C.; $15 per hundred.

"Current Developments in Preparation for Retirement" is the first of a series planned by the National Committee on the Aging of the Social Welfare Assembly as part of its information and consultation service. The series will cover a wide range of subjects such as housing, health, research, counseling, and library services as they relate to aging.

The present booklet is concerned chiefly with programs of retirement preparation which are defined as one of the fast growing employee services in industry. The four chapter titles indicate broadly the scope of the discussion—New Program for a New Need, Program Content and Method, Action Outside Industry, and Principles in Planning.

That retirement is a community as well as a personal matter is indicated by the final paragraphs on Community Attitudes and Facilities.

National Social Welfare Assembly, 345 E. 46th St., New York 17, N. Y.; 50 cents, reduction for quantity orders.

Annual Reports

"The First Decade" is the 1957 report of the American Heart Association. In the 10 years since this organization changed "from a relatively small society of physicians to a national voluntary health organization," it has provided nearly $31,500,000 for cardiac research. Four categories of research are supported—grants-in-aid to research institutions, established investigators, research fellows, and career investigators. On the basis of the 1957–1958 fiscal year, funds have been divided among them approximately 61, 22, 14, and 3 per cent, respectively.

The funds raised have increased from nearly three million dollars in 1949 to more than 20 million in 1957. Among the research achievements of the period are advances in heart surgery, a large degree of rheumatic fever prevention, the

near conquest of subacute bacterial endocarditis, and new and improved methods for treating high blood pressure. American Heart Association, 44 East 23rd St., New York 10, N. Y.

The 83rd Annual Report of the Evanston (Ill.) Health Department illustrates the concept that the health department is but one in a complex of agencies that do the community health job. Not only are health department activities reported, but also those of closely related agencies such as the VNA and the Infant Welfare Society.

The nurses in the Health Department, the schools, VNA, and the Infant Society provide the 76,000 population of the city with about one nurse per 2,400 population; Health Department and school nurses together number about one per 4,200 of population; Health Department nurses alone number one per 15,000. School nurses in the elementary schools are in the ratio of about one nurse per 900 pupils.

In reporting expenditures those of the relevant voluntary agencies are included. Of what is estimated to be a per capita expenditure of $4.72, public funds account for slightly less than three quarters. Forty per cent of public expenditures are met by the Health Department, 30 per cent by the boards of education, 17 per cent from state funds, and 13 per cent by the mosquito abatement district.

Among other items reported is the Evanston Dental Caries Study which has been carried on during the 11 years in which the city's water supply has been fluoridated. "The prevalence of tooth decay has been significantly reduced in all age groups of Evanston children." Annual examinations have been made and methods and results of the study have been published through 17 scientific reports in dental journals. "We have enjoyed receiving visitors from all countries to see the study in operation to learn how we collect the data and examine the results."

Winston H. Tucker, M.D., Ph.D., is the public health director.

What It Costs to Educate a Doctor

The Association of American Medical Colleges and the W. K. Kellogg Foundation are undertaking to find the answers to two related questions—what is the cost of educating a physician and is the hospital internship an efficient and economic use of his time. For a one-year study of costs and income involved in undergraduate medical education and an 18-month study of the present system of internship in hospitals associated with medical schools, the Foundation has made two grants totaling $110,000 to the Association.

The cost problem involves developing procedures that will permit periodic comparative cost analysis and reporting as well as periodic reporting of income. An attempt will be made to find out to what extent income molds educational objectives and practices.

The educational value of the internship system will be assessed. Current opinion ranges from a belief that it should be abolished in favor of residency immediately following the medical degree to a belief that it should be increased to two years.

NEWS FROM THE FIELD

WHO News

The Year 1957

The "Work of WHO, 1957," is the annual report of the director-general to the World Health Assembly and to the United Nations. Research, particularly through stimulation and coordination; polio vaccine; the world-wide influenza pandemic; world-wide malaria eradication; professional training; the opening of the European Regional Office in Copenhagen; and the resumption of active participation by five inactive members are the events picked out for emphasis in the introduction by Director-General M. G. Candau, M.D.

Two-thirds of the 192-page volume is given over to a list of the projects in operation some time during the year ending November 30, 1957, not including those projects for which only technical advice was given from headquarters or regional offices. Included is the purpose of each project and the source of funds (regular budget, technical assistance, or UNICEF) but not the amount of assistance. The list is shown separately for each of the six regional officers of WHO. If proof were needed of the far flung cooperation of WHO with governments in developing health services as an integral part of their social, economic, and cultural development, this list would be such proof.

New Regional Office in Venezuela

The Pan American Sanitary Bureau has opened a new regional office in Caracas, Venezuela, to serve that republic and the Caribbean territories, replacing in part the former Caribbean field office in Kingston, Jamaica. Five other regional offices of PASB and WHO are located respectively in Mexico City, Guatemala, Lima, Rio de Janeiro, and Buenos Aires.

The government of Venezuela is providing the necessary office and a special annual contribution of about $50,000 toward the operating costs as well as meeting the cost of the move from Kingston.

Percy F. de Caires, M.D., M.P.H., on the staff of PASB for the past nine years, is the zone representative in the region and will administer the regional office.

Public Affairs Pamphlet on WHO

Among the many ways in which the first decade of WHO was noted is "The World Health Organization—Its Global Battle Against Disease." This Public Affairs Pamphlet (No. 265) by "the noted writer on health and welfare subjects," Albert Deutsch, dramatizes for the nontechnical reader the vast network of activities in which WHO has a part.

Primary emphasis is on WHO's success in many lands—the malaria eradication program, the development of sanitation programs, mental health, and training of personnel. But with an eye to American readers, he also emphasizes WHO's importance to this country not only in insuring against the spread of disease to our shores and in protecting our travelers, but also to our economy in making disease-free areas safer for investment. He does not forget that Americans have also learned from their contacts with health workers and their problems in other areas.

An introduction by Charles W. Mayo, M.D., of the Mayo Clinic, Rochester, Minn., mentions "the vigor, imagination, skill, and success that have attended the eminently statesmanlike labors" of WHO.

Public Affairs Pamphlets, 22 East 38th St., New York 16; 25 cents, reductions for quantity orders.

A good companion piece to this pamphlet—and one that helps further to

dramatize WHO—is a little booklet, largely of pictures. "Pictures of Health, World Health 1948–1958" has appealing pictures of some of the programs described by Mr. Deutsch. Available from WHO at United Nations, N. Y.

Death Rate Decreases and Increases

A recent statistical report issued by WHO reviews some world trends in death rates from certain diseases. It indicates that among 28 countries reporting, mortality from complications of pregnancy and child birth dropped nearly 50 per cent in some countries. For those reporting in 1956 Denmark had the lowest rate, 48.2 per 100,000 population, with Israel for its Jewish population a close second with a rate of 48.4. In this group the Ceylon rate of 376.5 was the highest. Among those reporting for 1955 New Zealand had a rate of 44.1, the United States, 47, and at the other end of the scale Switzerland, 104.3.

As to infections and parasitic diseases, figures for 1950 and 1956 indicate that in each of 12 countries except France 1956 death rates were from one-half to one-third of those for 1950. Japan and Ceylon changed places for highest rate in the two years, Japan going down from 201.9 to 69.0 and Ceylon from 180.5 to 91.3. The Netherlands had the lowest figures for both years, 30.7 and 12.2. France with the smallest drop reported 75.2 and 48.9, respectively, for the two years.

In each of 12 countries, this time including the United States and New Zealand but not Ceylon and Finland, death rates from what is called a "modern" disease, cancer of the respiratory system, increased between 1950 and 1955. The increase was about one-third in each country with Japan and Israel reporting the lowest rates both years and Scotland and England and Wales the highest, each of which were about 10 times those of Japan.

Detailed figures on other conditions will be found in Epidemiological and Vital Statistics Report, Vol. II, No. 3, Columbia University Press, 2960 Broadway, New York 27.

Tripling Medical Research Funds

That expenditures for medical research in the United States should be tripled to reach a billion dollars a year is the recommendation of a group of 10 consultants after a year's study. The group recently reported to Secretary Marion B. Folsom, U. S. Department of Health, Education, and Welfare, who appointed them to advise the department on long-term needs in medical research and medical education. Chairman of the group of medical educators and industry research executives was Stanhope Bayne-Jones, M.D., former technical director of research, Office of the Surgeon General, Department of the Army.

Among the recommendations were that the general research training program of the National Institutes of Health be markedly expanded over the years and that the emphasis, in relation to categorical training, be increased. It further recommended that the recent rapid growth in the research facilities of NIH should now be followed by a period of consolidation and slow growth of budget, facilities, and personnel. However, increased support of research by other institutions was recommended together with substantial increases in research and training activities at the Communicable Disease Center in Atlanta and the Taft Sanitary Engineering Center in Cincinnati. "Provision of large sums . . . solely for disease-oriented programs is not the procedure best calculated to produce superior investigators," says the report.

If medical research is to expand as recommended, the group warns that the number of scientists engaged in medical research must be increased from the present 20,000 to 45,000 by 1970. Thus

much larger funds than presently contemplated must be used for construction of medical schools. Even to maintain the present ratio of 132 physicians for each 100,000 population will require from 14 to 20 new medical schools costing from one half to one billion dollars.

Recommended also were increased grants for the research and training program of the Office of Vocational Rehabilitation, the Food and Drug Administration, and the Children's Bureau, giving the last named power to support research through grants and contracts.

The group concluded that the "system evolved for the administration of research and training grants is sound . . . and has been operated well." It recommended, however, that:

Research and training grants be administered with closer attention to the inherent relationships among research, training, and education.

More of the grants be made for substantial sums to support broadly defined areas of investigation for at least five years of assured support.

A new type of basic general support be provided to increase the capacity of institutions to perform their educational and research functions. Areas for which "carefully considered extension of research programs" were recommended are radiation injury, accidents, and air and water pollution.

The full printed report will be made available as a public document.

Outline for Home Care Programs

A group of 23 experts, meeting in Roanoke, Va., June 9–13, defined the kind of program they advocate as follows:

"Organized Home Care provides coordinated medical and related services to selected patients at home through a formally structured group comprising at least a family physician, a public health nurse, and a social caseworker, assisted by clerical service. To insure satisfactory functioning of such a service, patients must be formally referred and there must be an initial evaluation, monthly review of records, and a final discharge conference. There must be ready access to in-patient facilities."

The conference group called by the Chronic Disease Program of the Public Health Service recommended that:

PHS support demonstration programs to initiate and stimulate organized home care programs in a variety of community settings.

Prepayment plans should include financing home care programs, for studying the feasibility of which funds should be made available.

Public welfare agencies should pay such programs full costs for services to clients.

Health and health-related professions should give special attention to recruitment and training of personnel need in home care programs.

How the Federal Budget Evolves

Using Pope's "A mighty maze, but not without a plan" to describe it poetically, the federal budgetary process is described in prose approximating the layman's. This description is found in a recent eight-page review of the Social Legislation Information Service. In addition to outlining the steps through each season of the 18 months of the budget's gestation, the review also defines terms used in the budget.

Social Legislation Information Service, 1346 Connecticut Ave., N.W., Washington 6, D. C.; 25 cents, reductions for quantity orders.

A United Research Foundation

Early in 1957 the Medical Foundation of Metropolitan Boston was organized and has been accepted as a participant in the United Fund of Metropolitan Boston. As reported by the New England Journal of Medicine (Oct. 3, 1957, and June 19, 1958) the fund is designed to support medical research without being limited to any specific disease. In addition it plans a program of health information and education. The articles of incorporation outline the purposes as follows:

a. the support of research into the leading causes of death and disability, both physical and mental. Emphasis is to be placed upon, but not limited to, the main causes of disease and mortality and other serious health problems.

b. the carrying out and support of activities designed to put into active use the scientific information developed by medical research or other sources.

c. the carrying out and support of public educational programs to help families and individuals to receive the full benefits of available medical knowledge.

The Foundation's research allocations are currently focused on postdoctoral research fellowships, community health research, and especially meritorious noncategorical medical research projects. The last-named "may develop practical aspects and applications, which will still fit into the purposes of the Foundation." Fellowships are to be awarded for three years with possibility of extension and annual stipends are to range from $5,000 to $8,000.

Shortly after this Boston Foundation was created the American Medical Association established the American Medical Research Foundation "to promote the science and art of medicine, and the betterment of public health through planning and initiating medical research." At the recent annual meeting of the AMA the House of Delegates reported a resolution commending and approving voluntary health agencies and expressing the belief that they should "be free to conduct their own programs of research, public and professional education, and fund raising in their particular spheres of interest" and asking that AMA's Research Foundation "take no action that would endanger the constructive activities of national voluntary health agencies."

Conferences for Graduate Nurses

The School of Nursing of the University of Pennsylvania offers a number of conferences for graduate nurses in 1958 as follows:

Improving Interpersonal Relations—October 13, 14

Tuberculosis Nursing—November 10–14

Occupational Health Nursing—November 20

Newer Trends in Patient Care—An Interdisciplinary Approach—December 1–12

Further information from School of Nursing, University of Pennsylvania, 205 South 34th St., Philadelphia 4, Pa.

Reorganization in Kansas City

In Kansas City, Mo., an administrative reorganization has created a Department of Health and Hospitals to administer services with a budget of nearly five million dollars, 90 per cent of which is for the four municipal hospitals. Abraham Gelperin, M.D., Dr. P.H., M.S. Hosp. Adm., most recently senior physician at the VA hospital in Chicago, has been selected as director of health and hospitals. H. L. Dwyer, M.D., present director of health, nearing retirement, remains as director of public health services, a title of his own selection. Present hospital commissioner, I. B. Burns, M.D., will become medical superintendent of General Hospital.

ANA for Extending Social Security

The House of Delegates of the American Nurses' Association adopted and presented to the House Committee on Ways and Means on June 30, 1958, the following resolution on extension and improvement of Social Security:

WHEREAS, necessary health services should be available to all people in this country without regard to their ability to purchase, and

WHEREAS, prepayment through insurance has become a major and an effective method of financing health services, and

WHEREAS, certain groups in our population, particularly the disabled, retired and aged, are neither eligible nor able to avail themselves of voluntary health insurance, be it therefore

RESOLVED, That the American Nurses' Association support the extension and improve-

ment of the contributory social insurance to include health insurance for beneficiaries of old-age, survivors and disability insurance; and be it further

RESOLVED, That nursing services, including nursing care in the home, be included as a benefit of any prepaid health insurance program.

The action came as a result of a comprehensive review of the hitherto neutral position of ANA on government health insurance.

PERSONALS

DONALD J. ANNESER, M.P.H.,† is public health education consultant for the northwestern area of the state, Connecticut Department of Health.

HULDAH BANCROFT, Ph.D.,* professor of biostatistics, Tulane University, has retired and has been appointed emeritus professor. She is making her home at 819 East 58th St., Richmond 4, Va.

EUGENE N. BEESLEY, president of Eli Lilly and Company, pharmaceutical manufacturers, has been elected chairman, Board of Directors, Health Information Foundation.

DANIEL BLAIN, M.D.,† has resigned as medical director, American Psychiatric Association, to be free to devote his entire attention to selected problems that are major stumbling blocks to further progress in conquering mental illness and thus continues to direct special projects for the APA.

DURWARD L. BLAKEY, M.D., former assistant director, has become director, Division of Preventable Disease Control, Mississippi State Board of Health, succeeding A. L. GRAY, M.D., now state health officer.

ROY F. FEEMSTER, M.D., Dr.P.H.,* director, Division of Communicable Diseases, has been appointed also Massachusetts commissioner of public health, succeeding SAMUEL B. KIRKWOOD, M.D.,* whose term of office expired.

MARIO FISCHER, M.D.,† Duluth-St. Louis County (Minn.) health officer, is the new president of the National Tuberculosis Association.

ARTHUR ALAN FISCHL, M.D., director of medicine, Queens General Hospital, and former president, Queens County Medical Society, has been elected vice-president in charge of medical affairs, Group Health Insurance, New York City.

VIOLA FISHER,† formerly with the Iran Foundation setting up and organizing the dietary department at a new medical center at Shiraz, is now a resident lecturer in maternal and child nutrition, University of Michigan School of Public Health, succeeding M. ISABEL PATTERSON,* resigned to accept a position at Boston University.

JOHN P. FOX, M.D., M.P.H.,* professor of epidemiology, Tulane School of Medicine, has been appointed director, Division of Graduate Public Health and administrator of Tulane's graduate training program in public health and tropical medicine.

JOHN FULTON, D.D.S.,* former dental resources adviser, Children's Bureau, is now in the Department of Epidemiology, University of North Carolina School of Public Health, to develop a teaching and research program for dentists.

MARY HOLMES GILMORE, Ed.D.,† former director, West Pennsylvania Area, Pennsylvania Mental Health Society, is now executive director, Mental Health Society of Alleghany County, Pittsburgh.

LINCOLN GODFREY, JR., M.D., of the University of Pennsylvania Medical School, has been appointed director for research, Medical Research Committee, National Council on Alcoholism.

ARCHIE LEE GRAY, M.D., M.P.H., former assistant executive officer and secretary of the board and director, Division of Preventable Disease Control, Mississippi State Board of Health, has been named Mississippi state health officer succeeding FELIX J. UNDERWOOD, M.D.*

JACK C. HALDEMAN, M.D., M.P.H.,* former assistant chief, has been appointed chief, Division of Hospital and Medical Facilities, succeeding VANE M. HOGE, M.D.,* retiring from the Service and now executive director, newly created Hospital Planning Council of Metropolitan Chicago.

WILFRED H. HIGASHIMACHI, Ph.D., formerly with the Child Diagnostic Center, University of Colorado Medical Center, is now clinical psychologist, Colorado Department of Public Health.

ROBERT J. KEEHN, M.S.,† director, Bureau of Vital Statistics, Connecticut State Department of Health, has resigned to become professional assistant, Division of Medical Services, National Research Council, Washington, D. C.

ALEXANDER W. KRUGER, M.D., F.A.C.H.A., former manager, VA Brooklyn Hospital, has been appointed health services consultant, National Committee on the Aging, National Social Welfare Assembly, New York City.

BRIAN MACMAHON, M.D.,* former professor

* Fellow.
† Member.

environmental medicine and community health, College of Medicine, State University of New York in Brooklyn, is now professor and head, Department of Epidemiology, Harvard School of Public Health.

PERRY J. MANHEIMS, M.D., M.R.S.H.,* director of laboratories, Lenox Hill Hospital, New York City, has retired and has been appointed consulting pathologist to the hospital.

FLORENCE MANLEY, R.N.,* consultant public health nurse in education, Bureau of Public Health Nursing, New York State Health Department, has retired.

GEOFFREY MARTIN, M.D.,† has been appointed executive secretary and health officer for Kansas by the Kansas State Board of Health effective August 1. Dr. Martin for the past seven years was director of the Maternal and Child Health Division.

ROBERT MCGHIE MCAMMOND, former director of planning, State Department of Mental Hygiene, is now director, Office of Planning and Procedures, State Health Department, Albany, N. Y., succeeding MURRAY R. NATHAN,† now in the State Law Department.

ROSS A. MCFARLAND, M.D.,† who is director, Guggenheim Center for Aviation Health and Safety, Harvard School of Public Health, has been named also professor of environmental health and safety in the new Division of Environmental Hygiene at the school.

FRANK J. MCGOVERN, formerly with the U. S. Air Force, is now audiometrist, Colorado State Health Department.

ROY J. MORTON, C.E.,* president, and JOHN W. KNUTSON, D.D.S.,* immediate past-president of the American Public Health Association, have been awarded honorary fellowships in the Royal Society of Health.

GEORGE A. NEVITT, D.D.S.,* regional dental consultant, San Francisco Regional Office, Public Health Service, is on a year's leave on assignment to WHO's Regional Office, Alexandria, Egypt.

JOHN C. NUNEMAKER, M.D., former director, Education Service, VA Department of Medicine and Surgery, is now associate secretary, American Medical Association, Council on Medical Education and Hospitals, Chicago, Ill.

JOHN S. PULLMAN † has been appointed health education consultant, Connecticut State Health Department, for the northeastern area.

HAROLD J. PAULUS, Ph.D., formerly in air pollution and industrial hygiene work in the Taft Engineering Center, Cincinnati, has been appointed associate professor, public health engineering and sanitation program, University of Minnesota School of Public Health.

PAUL Q. PETERSON, M.D., M.P.H.,* former chief, Chronic Disease Program, Bureau of States Services, Public Health Service, has been appointed assistant director, the National Institute of Allergy and Infectious Diseases of the Service.

L. PAUL RASMUSSEN, M.D., chief of Children's Services, Utah State Health Department, has resigned to become acting head, Department of Pediatrics, University of Utah College of Medicine.

MAJOR GENERAL PAUL I. ROBINSON,† head of the medicare program, has resigned to become coordinator of medical relations, Metropolitan Life Insurance Company, and has been succeeded by COLONEL FLOYD L. WERGELAND, former chief of personnel, Army Surgeon General's Office. The Personnel Division is being merged with the Education and Training Division.

GEORGE ROSEN, M.D., Ph.D.,* head of the Health Education Division, Columbia University School of Public Health and Administrative Medicine, and editor, American Journal of Public Health, will give the First Annual Victor Robinson Lecture in the History of Medicine at Temple University School of Medicine on September 23, 1958, on the topic "Victor Robinson—A Romantic Medical Historian."

MATTHEW ROSS, M.D., assistant clinical professor of psychiatry and of psychology, University of California Los Angeles Medical Center, has been appointed medical director of the American Psychiatric Association.

CLOTILDE P. SANGUINET,† director of health education, Indiana Tuberculosis Association, recently received the Annual Auerbach Memorial Award of the Association given to a living person who has made an outstanding contribution in the fight against tuberculosis.

SARAH J. SCHMIDT, M.P.H., former part-time consultant, is now public health education consultant to the fluoridation educational program, Division of Dental Hygiene, Connecticut State Department of Health.

CARL L. SEBELIUS, D.D.S., M.P.H.,* chief dental officer, WHO, has returned to his former position as director, Division of Dental Health, Tennessee State Department of Health. He has been succeeded at WHO by BRUCE RICE, D.D.S., assistant director, Division of Dental Health, New Zealand Department of Health.

MILTON J. E. SENN, M.D., Sterling professor

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* Fellow.
† Member.

of pediatrics and psychiatry, Yale School of Medicine, is in Soviet Russia to study child care and rearing practices in that country. In return a Russian doctor will come to Yale as a guest of the Child Study Center.

ALLAN W. SHERMAN, former director, Cleveland Society for the Blind, has been appointed executive director of the Lighthouse, New York Association for the Blind, succeeding PHILIP S. PLATT, Ph.D.,* retired.

JOHN W. SHIPP,† sanitarian, PHS, formerly assigned to ICA as acting director, Tripolitania Joint Public Health Service, Libya, is now assigned as instructor of field spraying operations, PASB/WHO/ICA sponsored Malaria Eradication Training Center, School of Public Health, Ministry of Health, Kingston, Jamaica.

WILLIAM B. SIMERAL, formerly with the Army Chemical Corporation, is now in the Engineering Section, Colorado State Health Department.

GEORGE W. SOFFE, M.D., former chief, Medical Facilities Bureau, Utah State Health Department, is now health officer, succeeding JOSEPH P. KESLER, M.D.,* resigned to become director, Utah Department of Rehabilitation, administered by the University of Utah College of Medicine.

THAMARA M. STANDER, M.D.,* epidemiologist, Nassau County (N. Y.) Department of Health, retired in June, 1958, and is at her home 160 Cabrini Boulevard, New York 33.

JAMES H. STEELE, D.V.M., M.P.H.,* chief veterinarian, PHS Communicable Disease Center, Atlanta, Ga., has received the 1958 Alumni Award for Distinguished Service from Michigan State University on nomination of the Michigan Alumni Club of Atlanta.

FELIX A. TORNABENE, M.D., M.P.H.,* former regional health officer, Northeastern Region, has been appointed health officer of Will County (Ill.) Health Department, with offices in Joliet. He succeeds L. L. FATHERREE, M.D., M.P.H.,* now director, of Champaign-Urbana Public Health District.

DAVID VAN DER SLICE, M.D., M.P.H.,* former director, Department of Health Services, Oakland (Calif.) public schools, is now on the staff of the Public Health Division of the International Cooperation Administration as public health physician, the Division of Health, Welfare, and Housing, U. S. Operations Mission, Lima, Peru.

ELIZABETH L. WATKINS, former medical social consultant, Anne Arundel (Md.) County Health Department, has been appointed assistant professor of social service in public health, University of Michigan School of Public Health and assistant professor of social work in the School of Social Work.

KATHARINE L. WILLIAMS,† formerly in the Division of Indian Health, PHS, is now medical social consultant, Colorado State Health Department.

ROBERT WORTH, M.D., M.P.H., former assistant chief, Bureau of Geriatrics, Cancer Control and Venereal Disease, is now Kauai County Health Officer, Hawaii.

JOHN B. YOUMANS, M.D., dean, Vanderbilt University School of Medicine, has been appointed director of research, Surgeon General's Office, U. S. Army.

* Fellow.
† Member.

DEATHS

EDWARD BARTOW, Ph.D.,* professor of chemistry and chemical engineering, State University of Iowa, Iowa City, Iowa (Engineering and Sanitation Section).

RAYMOND OSBORNE TORR,† public relations director, National Fund for Medical Education, New York, N. Y., at the age of 58 (Public Health Education Section).

CONFERENCES AND DATES

American Public Health Association, 86th Annual Meeting, St. Louis, Mo., Headquarters: Kiel Auditorium, October 27–31, and Related Organizations (includes preconvention days):

American Association of Public Health Physicians
American Association of Vital Records and Public Health Statistics
American Board of Preventive Medicine (October 24 and 25)
American College of Preventive Medicine
American Industrial Hygiene Association
American Labor Health Association (October 26)
American National Council for Health Education of the Public
American School Health Association (October 26)
American Society of Professional Biologists, Inc.
Association of Business Management in Public Health
Association of Reserve Officers of the U. S. Public Health Service
Association of Schools of Public Health
Association of State and Territorial Directors of Public Health Nursing
Association of State and Territorial Public Health Nutrition Directors
Association of State Maternal and Child

Health and Crippled Children's Directors
Association of Teachers of Preventive Medicine (October 26)
Cleveland Health Museum, National Advisory Council
Commissioned Officers Association of the U. S. Public Health Service
Committee on Medical Care Teaching of of the Association of Teachers of Preventive Medicine
Conference of Municipal Public Health Engineers
Conference of Municipal Public Health Nursing Directors
Conference of Public Health Veterinarians
Conference of State and Provincial Health Authorities of North America
Conference of State and Provincial Public Health Laboratory Directors (October 26)
Conference of State Directors of Public Health Training (October 26)
Conference of State Sanitary Engineers
Industrial Medical Association
International Health Alumni, sponsored by the Public Health Division, U. S. International Cooperation Administration
International Union for Health Education of the Public
Joint Commission on Mental Illness and Health
Mental Health Nurse Consultants (October 25 and 26)
Military Government-Civil Affairs Public Health Society
National Association of Sanitarians
National Citizens Committee for the World Health Organization
National Conference for Health Council Work (October 25 and 26)
National Health Council, The Commission on Health Careers
National Sanitation Foundation, Council of Consultants
National Society for the Prevention of Blindness
National Tuberculosis Association
Public Health Cancer Association of America
Social Workers in Health and Welfare Programs
Society of Public Health Educators (October 29–30)

Alumni Groups:
California Public Health Alumni Association, University of
Columbia University School of Public Health and Administrative Medicine, The Association of the Alumni of the
Delta Omega
George Peabody College Alumni
Harvard Public Health Alumni Association
Johns Hopkins University Alumni
Michigan Alumni, University of
Minnesota, University of
North Carolina School of Public Health Alumni Association, University of
Pittsburgh Alumni, University of
Toronto School of Hygiene Alumni, University of
Tulane University Alumni
Yale University Alumni

State and Regional Public Health Meetings:

Florida Public Health Association. George Washington Hotel, West Palm Beach. October 2–4.
Minnesota Public Health Association. St. Paul Hotel, St. Paul. September 18–19.
Nebraska Public Health Association. Castle Hotel, Omaha. September 25–26.
Oregon Public Health Association. Multnomah County Health Department, Portland. November 6–7.
South Dakota Public Health Association and Social Welfare. Marvin Hughett Hotel, Huron. September 10–12.
Tennessee Public Health Association. Maxwell House Hotel, Nashville. October 1–3.
Washington State Public Health Association. Chinook Hotel, Yakima. October 26–28.

Meetings of Other Organizations Coming in September, October, and November:

American Academy of Pediatrics. Palmer House, Chicago, Ill. October 20–23.
American Association of Medical Record Librarians. Boston, Mass. October 13–16.
American Dental Association. Dallas, Tex. November 10–13.
American Dietetic Association. Philadelphia, Pa. October 21–24.
American Heart Association. San Francisco, Calif. October 25–31.
American Society of Tropical Medicine and Hygiene. Deauville Hotel, Miami Beach, Fla. November 5–8.
Congress of the International Association for Social Progress. Brussels, Belgium. September 20–23.
Cuban National Dental Congress (Fifth). Havana, Cuba. November 14–17.
Federation of Sewage and Industrial Wastes Associations. Sheraton-Cadillac Hotel, Detroit, Mich. October 6–9.

International Association for the Prevention of Blindness. Brussels, Belgium. September 8–12.

International Conference of Social Work (Ninth). Tokyo, Japan. November 30–December 6.

International Conference on the Peaceful Uses of Atomic Energy (Second). Geneva, Switzerland. September 1–13.

International Congress of Allergology. Paris, France. October 19–26.

International Congress of Leprology (Seventh). Sankei Kaikan Building, Tokyo, Japan. November 12–19.

International Congress of Psychotherapy. Barcelona, Spain. September.

International Congress of Tropical Medicine and Malaria. Lisbon, Portugal. September 5–13.

Lead Hygiene Conference. Drake Hotel, Chicago, Ill. November 6–7.

National Association for Retarded Children. Philadelphia, Pa. October 8–11.

National Safety Congress. Conrad Hilton Hotel, Chicago, Ill. October 20–24.

National Society for Crippled Children and Adults. Statler Hilton Hotel, Dallas, Tex. November 16–20.

National Recreation Association. Atlantic City, N. J. September 22–26.

National Rehabilitation Association. Asheville, N. C. October 13–15.

Planned Parenthood Federation of America. Roosevelt Hotel, New York, N. Y. October 14–16.

Symposium on "Advances in Human Nutrition." Heinz Auditorium, Pittsburgh, Pa. October 13–14.

United States Conference of Mayors. Hotel Fontainebleau, Miami Beach, Fla. September 11–13.

World Federation of UN Associations. Brussels, Belgium. September.

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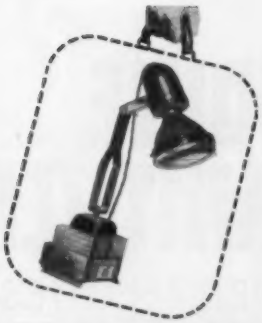

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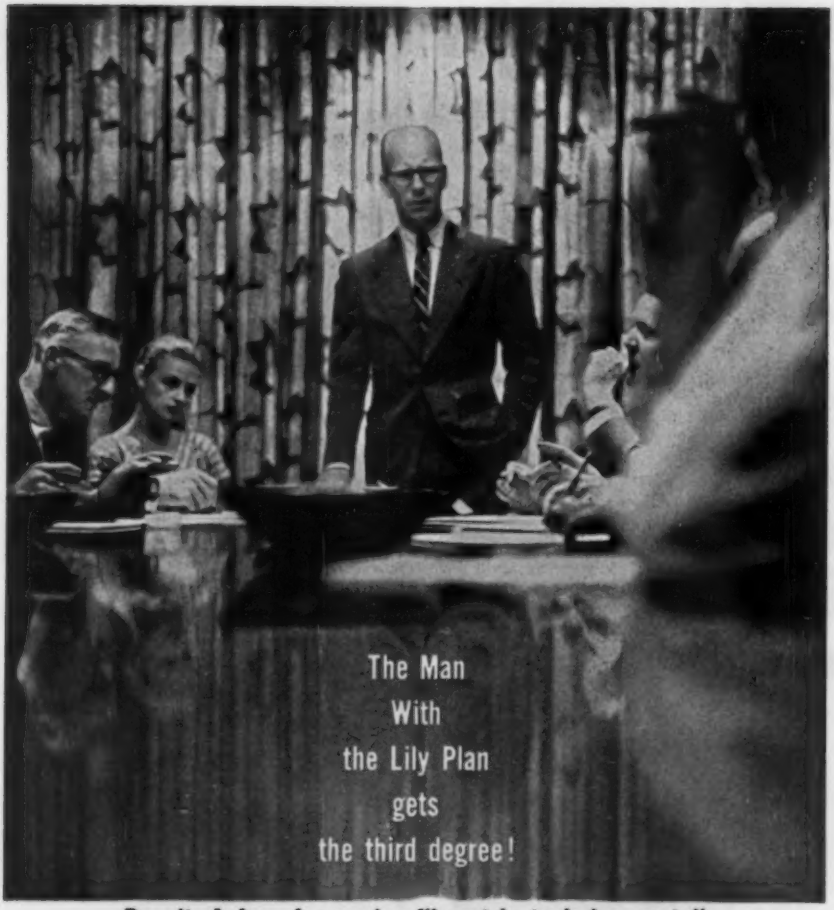

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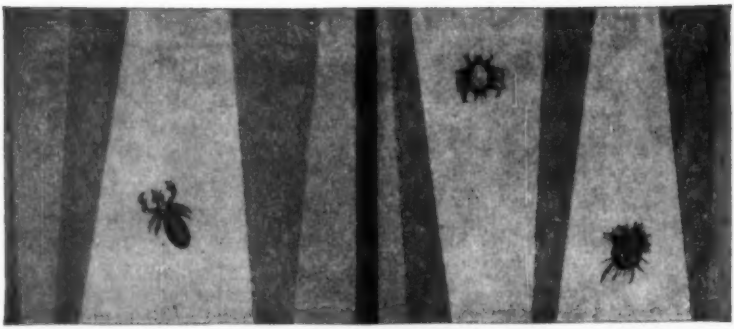

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